

14.—CONTRIBUTIONES FLORAE AUSTRALIAE
OCCIDENTALIS XI.

By CHARLES AUSTIN GARDNER.

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INTRODUCTION.

This paper contains descriptions of fifty new species of plants collected during recent years. It represents a portion of the unpublished species which were discovered during the work of the reorganisation of the State Herbarium, Perth, and is only a part of the total material awaiting description. Since the publication of *Contribuciones X*, six species were described at Kew in Hooker's *Icones Plantarum* tt 3378-3384, 1939.

The material described in this paper consists in the main of selections from the collections of Dr. W. E. Blackall, and of specimens which we conjointly collected during a tour undertaken in 1931, which covered a large tract of country in South-Western Australia. In addition there are a few species collected in the North-West between the Gascoyne and Fortescue Rivers in 1932 when I accompanied the Minister for Lands and Agriculture on an investigational tour during August of that year.

More recently, whilst engaged on critical comparative studies in the Herbarium of the Royal Botanic Gardens, Kew, and the Berlin Herbarium, further new species were brought to light, and some changes in nomenclature have been necessitated. Only a few of these have been incorporated in this paper; others will follow in the next Contribution. The collections of Mr. G. E. Brockway, District Forests Officer at Kalgoorlie have resulted in the discovery of some new species of *Encalyptus*, and the recording of a hitherto little known species which has been fully described.

In presenting this paper for publication, I desire to thank in the first place, Sir Arthur Hill, Director of the Royal Botanic Gardens, Kew, who extended to me every facility and courtesy in my studies there which occupied two years, and who so generously presented to the State Herbarium portions of type specimens which are of inestimable value. I am also indebted to Dr. L. Diels of the Berlin Herbarium, for the generous gift of numerous type fragments of specimens which he, in company with Dr. E. Pritzel, collected in Western Australia in 1901 and 1902.

Finally I wish to express my thanks to Dr. W. E. Blackall who has assisted me by placing at my disposal the whole of his herbarium, and for the donation to the State Herbarium of all the undescribed specimens which form the type material of many of the species herein described.

State Herbarium,

Perth, W.A., March, 1941.

MONOCOTYLEDONEÆ.

GRAMINEÆ.

Triodia Wiseana C. A. Gardn. sp. nov.

Laxe caespitosa, innovationes numerosae, culmis numerosis e caespite exsertis, rigidis, adscendentibus, paucifoliatis, vaginis supremis breviter exsertis; foliis arenato-patentibus deinde horizontaliter divaricatis, glaucis, laevis, apice cartilagineo-pungentibus, ora vaginae et marginibus inferioribus exceptis, rigidissimis, tereti-involutis, basin versus exceptis; vaginis glabris, striatis, non viscosis, ab ora dense et longe albo-ciliatis; paniculis brevibus, paucispiculatis, spiculis longe pedunculatis, erectis, pedunculis scabris, flexuosis; glumis elliptico-lanceolatis, glabris, duris, dorso convexis, laevis, crassis, trinervis, apice vix aentis, glumis superioribus quam inferiores vix longioribus; lemmatis 3-5, cartilagineis, purpureis, glabris, dorso laevis, breviter et subaequaliter tridentatis, dentibus ovato-triangularibus, acutis, minute ciliolatis, nervis 9 approximatis in fasciculis 3 quorum nervo centrale ipso baso ad apices loborum producto, lateralibus incompletis; palea quam lemma brevior, tenuiter papyracea, oblonga, retusa, bicarinata; staminibus 3.

Planta usque 40 cm. alta; lamina foliorum inferiorum 16 cm. longa, superiorum 1.5-4 cm. longa; panícula usque 6 cm. longa; glumae 9 mm. longae; lemma vix 6 mm. longa; palea 3 mm. longa.

Hab. in regione tropica ab montibus Hauersley, in rupestribus ad viam "Mount Margaret Pass," circ. 1000 m. alt., flor. m. August, *Gardner*, 3129.

Hanc speciem vero pro illustrissimo Francisco Iosepho Wise nomino, cuius est Australiae occidentalis Concilio provincia Agricolaes res consulere colonariasque, qui, zelo valde memoriae digno, ad plantas quae regione fluvium Gascoyne inter et Fortescue vireseant investigandas anno 1932, se mihi comitem amabilissimum consociavit.

Affinity to *T. microstachya* R. Br., differing in the hairy leaves, in the much shorter culms, the much reduced and few-flowered and flexuosely-branched panicle, glabrous glumes, &c. It bears some resemblance to *T. longiceps* J. M. Black, but can be readily separated by the much shorter panicle, fewer-flowered spikelets, the teeth of the lemma which is never hairy, and in the hairs of the leaves. The comparative shape and size of the teeth or lobes in *Triodia* is not reliable to any extent, and varies considerably in *T. Basedowii* E. Pritzel.

DICOTYLEDONEÆ.

CASUARINACEÆ.

Casuarina pinaster C. A. Gardn. sp. nov.

Frutex 1-4 metralis altus, ramosissimus, ramis patento-divaricatis, reliquis squamorum delapsorum persistentibus indutis; ramulis confertis, divaricatis, quaternato-verticillatis, biarticulatis, membro ramulorum infero in dentes quatuor saepe marcescentes desinente, dentibus ovato-lanceolatis, apice setaceis, erectis; supero inarticulato, elongato, folium tetragonum imitante, internodiis albo-pubescentibus, demum glabris, apice pungento-acutis; internodiis amentigeris valde abbreviatis; amentis masculis in axillis dentium congestis, quaternis, brevibus, squamis subovatis, extus pubescentibus; strobilo breviter pedunculato ovoideo; bractea crassa, e basi lata dorso rufo-pilosula, in setam brevem producta; bracteolis exsertis, apice rotundo-obtusis, crassis,

extus leviter convexis, lamina exteriori sublibere, in rostrum longum triquetra producta, valvis exedente; achaenio nigrescente, ala hyalina obliqua.

Frutex 1-4 m. altus, habitus fere piniodei; membrum foliaceum 4-5 cm. longum; amenta ♂ usque ad 1 cm. longa; strobilus 2-2.5 longus ac latus.

Hab. in distr. Stirling, prope Kukerin, in arenoso-lutosis, *Gardner* 1732; prope Nyabing, W. E. Blackall 3094.

The affinity of this species is with *C. acuarua* F. Muell., but differs in the much larger size, the rigid divaricate branches, the length of the terminal (upper) internode and its distinctly tetragonal form, in the scale-leaves which are long and membranous and terminate in fine setaceous points, and ciliate on the margins; the teeth of the male spike are much larger and acuminate, and the spikes shorter, more robust, and more contracted; the cones are larger (almost twice the size of those of *C. acuarua*), and the dorsal lamina is very much reduced, and produced into a stout triquetrous spine which only shortly exceeds the valvular portion and incurved at the apex.

C. Prinsepiana *C. Andrews*, in Jour. West. Aus. Nat. Hist. Soc. i. 43 (1904).

The type specimen of this species, now in the possession of the State Herbarium, possesses no cones, the type consisting only of a small branch with a young female inflorescence. A search for material in the herbaria of the Royal Botanic Gardens, the Natural History Museum, South Kensington, and the Berlin Herbarium proved futile in this respect, and we must assume that the type cones are not in existence. In 1936, Horace Brown brought me specimens of a *Casuarina* from Wurarga, with several cones, the bracteoles of which are tricuspidate, the two lateral points are side by side very close to the extremity of the valve, with a rounded thin valve apex between them, and a third conical process from the dorsal surface. This appeared to be an undescribed species, for which I had proposed the name *C. tricuspidata*, but still further material has been received from Mullewa, and a search for another *Casuarina* which might prove to be typical *C. Prinsepiana* has been unproductive. Andrews, in describing the bracteole of *C. Prinsepiana* says "Valves much exerted with rounded points, back covered with long brown hair below, glabrous in the free part with two prominent ridges, obtuse and extending beyond the apex of the valve; occasionally there is a third shorter protuberance between the other two, adnate lower down and ending in a short point."

This description does not exactly apply to the Wurarga specimens, but considering that these sharp points are so easily damaged, and that the branchlets of the two are indistinguishable, it is perhaps best to consider the Wurarga and Mullewa specimens recently collected as representing *C. Prinsepiana*. The affinity of the species is with *C. acutivalvis*, the plant differing in being a tree with the habit and appearance of *C. glauca*, but the cones of *C. acutivalvis*, except that the bracteoles bear a conical dorsal appendage, and instead of a simple terminal conical point, there are two collateral conical protuberances—not "ridges" extending beyond the valvular portion.

In *C. acutivalvis* there may occasionally be found a division of the apex of the bracteole point into two points, but in *C. Prinsepiana* the two points are quite distinct, and the obtuse and thin apex of the valvular portion is plainly visible between the two.

C. bicuspidata *Diels* non *Benth.*

The specimens described as *C. bicuspidata* by Diels, collected near Southern Cross, the type of which I saw in the Berlin Herbarium, is *C. acutivalvis* F. Muell. *C. bicuspidata* as far as is known, is restricted to South Australia and Tasmania.

PROTEACEÆ.

Grevillea eriobotrya F. Muell. Fragm. x. 44 (1876).

G. Victori A. Morrison, the type of which is in the Edinburgh Herbarium, is synonymous with the above. The species is common in yellow sand over an area extending from Kununoppin to Koorda, and the species is a shrub 3 or 4 metres in height with white flowers. The seeds are thick, glabrous and hemispherical in an orbicular white villous follicle. They are much like those of *G. annulifera* F. Muell.

Grevillea nana C. A. Gardn. sp. nov.

Section *Hebegyne*.

Frutex humilis, ramis elongatis, decumbentibus; foliis pinnatis, elongatis, rhachi flexuosa, subtus bisulcata, segmentis (pinnæ) 7-9, anguste linearibus, divaricatis, rectis vel curvatis apice pungentibus, glabris, supra convexis, subtus bisuleatis; racemis terminalibus, secundis, longe pedunculatis, laxifloris, rhachi dense albo-villoso; pedicellis elongatis, albo-villosis; perianthio albido, extus dense albo-sericeo, sub limbo globoso revoluta; toro plus minusve recto; glandula hypogynæ late semilunari, erassa, conspiciua, a toro libera; ovario sessili, albo-villoso; stylo purpureo, glabro, stigmatibus obliquo.

Folia usque 20 cm. longa, segmenta 1.8-4 cm. longa; racemi 8 cm. longi; pedunculi 8-9 cm. longi; pedicelli 8mm. longi; perianthium 6 mm. longum; stylus 1.8 cm. longus.

Hab. in distr. Avou inter Koorda et Beneubbin, in arenosis apertis, flor. m. Sept. W. E. Blackall 3380.

Affinity to *G. asparagoides* Meissn., differing in the simply pinnate glabrous and much longer leaves, and the absence of a glandular pubescence. There is a certain similarity in the leaves to those of *G. Hookeriana* Meissn., but they are pungently acute and different in other respects.

Grevillea rufa C. A. Gardn. sp. nov.

Section *Plagiopoda*.

Frutex rigidus, diffusus, semimetralis altus, ramis divaricatis, ramulis pubescentibus; foliis cuneato-ovatis vel cuneato-obovatis, petiolatis, sinuato-dentatis, dentibus spino-pungentibus, remotis, conspiciue reticulatis, supra scabris, subtus appresso-pubescentibus, basi leviter attenuatis, apice plusminusve truncatis; racemis terminalibus, rhachi breve; pedicellis rufo-villosis, perianthio subæquilongis; floribus rufo-purpurascensibus; perianthio dense villosa, intus glabro, sub limbo ovoideo-globoso revoluta; toro valde obliquo, glandula hypogynæ inconspiciua, toro concavo adnata; ovario breviter sed distincte stipitato, dense rufo-villoso; stylo vix exserto, appresso-hirsuto, crasso, complanato.

Frutex circiter 50 cm. altus; folia 4 cm. longa, 2.5 cm. lata; pedicelli 1-1.2 cm. longi; perianthium ca. 1 cm. longum; stylus 1.7 cm. longus.

Hab. in distr. Coolgardie, ad fines meridionales prope Pallarup juxta Mount Short, in clivis glareosis, fl. m. Septem. 1930. Gardner.

Affinity to *G. insignis* Kipp. ex Meissn., but with an indumentum of \pm rufous hairs throughout, that of the flowers being a rusty red. The leaves are cuneate at the base, and vary from obovate to ovate in outline, resembling somewhat those of *G. agrifolia* A. Cunn. in shape and texture. This interesting and apparently very rare species is known only from the original locality where only two or three plants were found.

Grevillea Dielsiana C. A. Gardn. sp. nov.Section *Calothyrsus*.

Frutex ramosus, circiter metralis altus, ramis ramulisque intrieato-divaricatis, glabris vel sparse appresso-pubescentibus; foliis longe petiolatis, triternatis, iterum trifidis, segmentis linearibus, divaricatis, angulato-costatis, glabris, apice pungentibus; raemis paucifloris, secundis, rhaehi glabra vel pauce pubescenti, pedicellis gracilibus; perianthio aurantiaco vel eocineo, sub limbo ovoideo-globoso revoluto, extus glabro, intus albo-tomentoso; toro valde obliquo; glandula hypogyna conspicua, erassiuscula, subpatelliformi; ovario glabro, stipitato; stylo elongato, glabro, viridi, disco oblique laterali.

Frutex 70-90 cm. altus; folia 4-5 cm. longa, segmenta ultima 1-1.4 cm. longa; pedicelli 6-7 mm. longi; perianthium circiter 8 mm. longum; stylus 2.5 cm. longus.

Hab. in distr. Irwin, in arenosis fruticulosus prope flumen Murchison, Gardner 2590 (Typus); atque inter Indarra et Yuna, in locis similibus Gardner.

Affinity to *G. teretifolia* Meissn., from which it differs in the constantly trichotomously divided leaves, larger flowers and fewer flowered racemes, the oblique torus and the saccate base of the perianth, as well as in the indumentum of the inner surface of the perianth-segments.

Grevillea obliquistigma C. A. Gardn. sp. nov.Section *Conogyne*.

Frutex erectus, 2-5 metralis altus, ramis ramulisque erectis, demum glabris; foliis angustissime linearibus, integris, acuminatis, supra valde convexis et uninervis, subtus profunde bisulcatis, glabris; raemis terminalibus, erectis, densifloris, cylindricis; rhaehi glabra; floribus albis; pedicellis glabris; perianthio sub limbo recurvato, extus glabro, intus pilis brevibus adpressis vestito; toro recto; glandula hypogyna parva sed distincta, reniformi; ovario stipitato, glabro, stylo glabro, breviter exserto, stigmate brevi conico, obliquo, basi marginato margine membranaceo plicato erenulato.

Frutex 2-5 m. altus; folia 16-18 cm. longa, 1 mm. lata; raemi 5 cm. (cum pedunculo 8 cm.) longi; pedicelli 4 mm. longi; perianthium ca. 4 mm. longum; stylus 5 mm. longus.

Hab. in distr. Austin, inter Pindar et Wurarga, in arenosis aridis apertis flor. m. Septem. Gardner 2620.

I have referred this species to the Section *Conogyne*, although the stigma is almost that of *G. trachythea* F. Muell., which Bentham places in the Sect. *Lissostylis*, and from which it differs in the much longer leaves, in being glabrous, and in the presence of a hypogynous gland. It is also close to *G. didymobotrya* Meissn., and *G. nematophylla* F. Muell., but differs from both in the distinctly bilateral leaves which are convex above and deeply sulcate from the closely revolute margins; in addition it differs from *G. didymobotrya* Meissn. in the presence of a hypogynous gland, in the glabrous exterior of the perianth and the much shorter and thicker style; from *G. nematophylla* it differs also in the simple inflorescence, much longer pedicels and shorter style, while the stigma separates it from both.

Grevillea candicans C. A. Gardn. sp. nov.Section *Cycladenia*.

Frutex erectus, 2 m. altus, ramis erectis, ramulis sericeo-pubescentibus; foliis erectis, pinnatis, pinnis 3-5, augustissime linearibus, rigidis, supra convexis, uninervis, subtus bisulcatis, glabris, acutis, apiculo ustulato praeditis; racemis plerumque singulis, terminalibus, erectis, plusminusve laxifloris; pedunculis brevissime pilosis; pedicellis brevissimis patentibus, pilosis; perianthio albo, extus pilis brevibus vestito, intus glabro basin excepto, sub limbo ovoideo-globoso revoluta; toro recto; glandula hypogyna conspicua, annuliformi, ovario globoso, glabro, longe stipitato, non viscoso; stylo albo, elongato, leviter plano, disco obliquo laterali.

Frutex 2 m. altus; folia usque 17 cm. longa, pinnae usque 14 cm. longae, 1 mm. latae; racemi 9-11 cm. longi; perianthium 1 cm. longum, stylus 1.5 cm. longus.

Hab. in distr. Irwin ad fines septentrionales, ab Galena septentrionem circa 60 km. versus, in locis arenosis apertis, flor. m. Septem. W. E. Blackall 4718. Typus in Herb. Perth.

Affinity to *G. leucoptera* Meissn., differing principally in the reduced inflorescence (usually a simple raceme or very rarely 2 together), the shortly hairy perianth, fewer leaf-segments, axis of the raceme &c.

STRANGEA Meissn.

In working over some specimens in the Berlin Herbarium in August, 1937, I found a specimen of *Strangea linearis* Meissn. in fruit, which I immediately recognised as congeneric with a plant formerly known as *Hakea* ? *stenocarpoides* F. Muell. ex Benth., and described in this Journal xix. 79 (1933) under the name *Diploptera stenocarpoides* (F. Muell. ex Benth.) C. A. Gardn. Still later, in January, 1940, whilst collecting at Cockleshell Gully, I saw *Strangea cyathocarpa* in both flower and fruit, and through the courtesy of Mr. C. T. White, the Government Botanist of Queensland, I secured fruiting material of *S. linearis*. There is no doubt that the three species constitute a separate and distinct genus, but in no case have previous authors described the seed correctly. This is solitary and pendulous on a slender funicle, and together with the funicle enclosed in a 2-seriate endocarp; the inner layer of the endocarp conforms to the shape of the cavity of the follicle and entirely encloses both seed and funicle, and is in turn enveloped by an outer layer of the endocarp which is membranous but free along the outer margin. This peculiar structure was described under *Diploptera*. Meissner, when describing *Strangea linearis* referred to "an upper follicle apparently quite developed, but only beginning to split on one edge, and showing the nerviform margin of the seed which we durst not take out for fear of spoiling the specimen, the other apparently less perfectly developed although ready to split to the base into two narrow convex and rather thick valves . . . with one single unripe blackish seed which is ten lines long, 3 lines broad, lanceolate, tapering at both ends, flat and membranous, bordered on one side with a slightly thickened nerviform margin." This description refers to the endocarp of the fruit and not to the seed itself. Mueller, in describing the same species (*S. linearis*) refers to the "wings of the testa at the apex suddenly and obliquely obtuse, at the base gradually cuspidate; the keel of the investing membrane is seen at the margin of the follicle."†

Drummond, when describing the seed of *S. cynanchicarpa* speaks of "a single seed about an inch long, shaped like the seed of the Ash, each seed being enclosed by *three* membranous coverings, the outer and inner being smooth and brown, not unlike the wings of the seed of *Hakea* and *Banksia* in substance, the middle membrane being of a light brown colour and very brittle." Mueller, in describing the seed of *Strangea cynanchicarpa* speaks of two seeds, and proceeds to describe in some detail the envelopes as the testa of the seed, and finally the seed itself as "the embryo of the consistency, taste and colour of an almond, edible, whence the seeds are called in the Colony 'Native almonds,' scarcely longer than half an inch, oval-rotund and lenticular; cotyledons extremely slenderly convex outside, the radicle included within the minute notch of the cotyledons extremely short."* The "embryo" thus described is the seed itself, and possesses a true seed testa, and is furthermore connected to the endocarpic membranes by a slender funicle. It is therefore evident that Meissner, Bentham and Mueller were unaware of the true structure of the fruit.

I have examined the fruits of the three species, the structures of which are identical.

Strangea stenocarpoides (F. Muell. ex Benth.) C. A. Gardn. comb. nov.
(Hakea ? stenocarpoides F. Muell. ex Benth. Fl. Austr., v. 511 (1870).
Diploptera stenocarpoides (F. Muell. ex Benth.) C. A. Gardn. Jour. Roy. Soc. West. Aust. xix., 79 (1933).

This species extends from the Denmark River almost to Nannup, inhabiting gravelly stony country, flowering in December.

Strangea cynanchicarpa (Meissn.) F. Muell. Fragm. vii. 132 (1871),
Molloya cynanchicarpa Meissn. in D. C. Prodr. xiv. 348—*Grevillea cynanchicarpa* Meissn. in Hook. Kew Jour. vii., 75 (1855)—*Fitchia cynanchicarpa* Meissn. l. c.

Descriptione addendum: Stock woody, horizontal, creeping, spreading to a diameter of 2 metres; branches erect, straight, the younger parts closely and densely tomentose-villous, becoming glabrous, the plant less than a metre high, and often only 50 cm.; leaves alternate, soon becoming glabrous, erect, linear to linear-spathulate, straight or falcate, mucronate or acute, entire or slightly toothed towards the apex, attenuated towards the base, 1-3-nerved, 5.5-9 cm. long, the secondary nerves spreading and anastomosing with the lateral primary nerves, but not conspicuous; pedicels erect, axillary and solitary in the upper axils, or in a small but dense terminal cluster, rather thick, tomentose-villous, 5 mm. long, bracteolate at the apex; bracteoles 4, free or united in the lowest third, ovate, densely ciliate; torus straight; perianth broad at the base and saccate on the upper side, green and red, becoming purple, tomentose-villous, the segments ultimately deciduous; segments irregular, the lowest segment the narrowest, and adnate for some distance from the base to the horizontal stipes of the ovary, the uppermost with a thick almost conical callosity at the point of constriction of the tube which is deflected on to the gland, limb of somewhat irregular lobes, all horned on

the back near their apices, all ovate, the lateral lobes or segments irregular, the uppermost with a broad and prominent spur below the anther, absent in the others; anthers 2-celled, broadly ovate. Hypogynous gland adnate to the stipes, and forming a concave boss at the upper side of its base; stipes of the ovary thick, glabrous, almost horizontal and flattened. Ovary silky-villous, 2-ovulate; style straight, thick, the stigmatic disc broad and orbicular, slightly lateral, with a prominent conical point in the centre. Follicle erect, stipitate, oblanceolate in outline or almost narrow-elliptical, beaked, opening longitudinally along the upper margin, 2-3-ribbed on each side, after dehiscing becoming broadly cymbiform and incurved, quite glabrous.

Seed solitary, seeding from the apex of the follicle, together with two envelopes (the endocarp), the outer black and membranous, free along the outer margin, the inner enclosing the seed and indehiscent, somewhat spongy in texture; seed ovate, lenticular, with a thin brown testa, dark towards the base, pale upwards, the funicle short and erect.

On the Moore River and the great sandplain north of Diamond Spring, *Drummond* vi. 190. Near the "Diamond of the Desert" Spring, *Gardner*, 11th February, 1940; gravelly sandheaths, Mount Lesueur, *Gardner*, 13th February, 1940.

I am indebted to Mr. F. Grigson of Cockleshell Gully, who assisted me in locating this species, which is nowhere common. It has, as *Drummond* remarked, the habit of a *Persoonia*, and its flowers, although rather large, are inconspicuous by reason of their colour. The follicles however are conspicuous, especially in the year after seeding, when they open out almost flat.

CHENOPODIACEÆ.

Kochia thesioides C. A. Gardn. sp. nov.

Frutex vel suffrutex 50 cm. altus, glaber, axillae foliorum exceptæ ramis erectis, tenuibus; foliis lineari-lanceolatis, alternis, sparsis, carnosis, breviter petiolatis, planis, acuminatis, lanatis dense in axillis foliorum; perianthio fructifero sessili, glabro, fere sphaerico, apice segmentis 5 subverticalibus connatis, segmentorum marginibus lanoso-ciliatis, perianthii tubo hemisphaerico, alis ad apicem horizontalibus vel reflexis in membrana disciformem amplam integram coalitis siccando nigrescente.

Planta 50 cm. alta; folia usque 1.5 cm. longa; perianthium fructiferum 5.5 mm. diam., 4.5 mm. longum.

Hab. in distr. Austin inter vicos Meekatharra et Wiluna, in campis lutosi nitrosi, fruct. m. July, etiam prope Leonora, fruct. m. Septem. *Gardner*.

Affinity to *K. pyramidata* differing in the slender erect habit, in the total absence of spinescent branchlets, in being almost entirely glabrous, with acute leaves and smaller fruits with an undulate more or less reflexed wing.

AMARANTACEÆ.

Trichinium albidum C. A. Gardn. sp. nov.Section *Parviflora*.

Fruticulus 30-60 cm. altus, copiose ramosus, ramulis erectis, teretibus, albo-tomentellis; foliis alternis, erectis, linearibus, sessilibus, acutis, crassiusculis, tomento adpresso brevi cinereo vestitis; spicis terminalibus, valde abbreviatis, ovoideis vel globosis, erectis, rhachi albo-tomentella; bracteis latissimo-suborbicularibus, fuscis, glabris, apiculatis; perianthii segmentis lanceolato-linearibus vel ovato-oblongis, apice acutis, glabris, ceterum extus longe albo-pilosis; interioribus angustioribus, omnibus brunneis vel viridibus et hyalino-marginatis; staminibus 5, in tubum cupulum ad basin connatis, filamentis dilatatis; squamulis intrastaminibus nullis; ovario globoso, glabro, sessili, stylo elongato.

Fruticulus 30-60 cm. altus; folia; folia 4-7 mm. longa; spica usque 1.5 cm. \times 1.3 cm.; bractee circa 3 \times 4 mm.; perianthii segmenta 6.5 mm. longa.

Hab. in distr. Austin inter Meekatharra et Wiluna, in lutosis nitrosis nudis, flor. m. Jul. *Gardner* 2368.

Nearest to *T. arthrolasium* (F. Muell.) Benth., differing in the smaller and shorter spikes, the smaller sessile leaves, and in the larger flowers with relatively shorter bracts.

MIMOSACEÆ.

Acacia daviesioides C. A. Gardn. sp. nov.Section *Continua*.

Fruticulus 30 cm. altus, ramis ramulisque valde tortilibus, intricato-divaricatis, prominenter 10-suleatis, costis resinoso-asperatis; phyllodiis \pm decurrentibus, valde recurvis, tetragonis vel sub-pentagonis, prominenter 5-nervosis, rigidissimis, acriter pungentibus, nervis scabris; capitulis pedunculatis, solitariis, axillaribus, phyllodiis aequantibus vel brevioribus, ca. 8-10 floris; floribus 4-meris; calyce tenui inaequaliter 4-5-lobato, glabro, lobis brevibus, obtusis; petalis subliberis, calycem duplo superantibus, ovatis vel ellipticis, acutis, crassis, marginibus minute fimbriolatis; ovario glabro.

Fruticulus 30 cm. altus, 60 cm. latus; phyllodia 5-7 mm. longa; pedunculi 5 mm. longi; capituli 4 mm. diam.; petala 2 mm. longa.

Hab. in distr. Irwin orientalis inter Latham et Buntine, in arenosis apertis, fl. m. Septem. *W. E. Blackall* 772 (Typus in Herb. Perth).

Affinity to *A. volubilis* F. Muell., and *A. ataxiphylla* Benth., differing from the former in the pungently acute phyllodia, more numerous ribs of the branches, shortly lobed glabrous calyx, and from the latter in the much shorter phyllodia, absence of stipules, fewer-flowered heads, and the obtusely and unequally lobed calyx.

Acacia Wiseana C. A. Gardn. sp. nov.

Frutex 1-3 metralis altus, ramis ramulisque prominenter suleatis, viridibus, spinescentibus, intricato-divaricatis; phyllodiis articulatis, perpaucis, eaducis, linearibus, rectis, divaricatis vel deflexis, acutis, vix pungentibus, unicostatis, planis, marginibus nervosis ad medium marginis anterioris glanduligeris; pedunculis axillaribus, patentibus, tenuibus, solitariis;

capitulis globosis, ea. 20-floris; floribus 5-meris; bracteolis lineari-spathulatis; sepalis lineari-spathulatis obtusis, sparse et breviter pubescentibus; petalis quam sepala duplo longioribus, oblanceolatis, acutis, levibus, connatis deinde liberis.

Frutex 1-3 m. altus; phyllodia 1 cm. longa, 1 mm. lata; pedunculi 1 cm. longi; petala 2 mm. longa.

Hab. in distr. Minilya prope Wandagee, in fruticetis ripariis fluminis Minilya lutosi solum, flor. in August. *F. J. S. Wise* et *C. A. Gardner* n. 3283.

The affinity of this species is with *A. spinescens* Benth., from which it differs in the smaller phyllodia which are rarely present, the long peduncles and more numerous flowers, in the free sepals and proportionately longer calyx. *A. spinescens* is not recorded from Western Australia.

Acacia aurea *C. A. Gardn.* sp. nov.

Section *Oligoneura*.

Frutex; ramulis phyllodiis junioribus pedunculisque hirsutis; phyllodiis erectis vel patentibus, obovatis, obliquis, plurinerviis, nervis crassis, prominenter reticulato-ramosis, apice mucronulatis, basi abrupte contractis, breviter petiolatis; stipulis ovatis, deciduis; pedunculis flavido-hirsutis, axillaribus, solitariis, 2-ramosis, duobus bracteis e basi ramorum secundarium; bracteis ovatis, brunneis, concavis, hyalinis; capitulis globosis, ea. 30-floris, densis, floribus 5-meris; sepalis subliberis, oblongis vel oblongo-cuneatis, obtusis, extus dense pubescentibus; petalis liberis, quam sepala vix duplo longioribus, lineari-oblongis, basin versus attenuatis, apice crassiusculis, aureo-pubescentibus.

Phyllodia usque 1 cm. longa, 5 mm. lata; petioli 1 mm. longi; pedunculi communi 1 mm. longi, pedunculi secundarii 6 mm. longi; capituli 4.5 mm. diam.; sepala ca. 1 mm. longa; petala 1.7 mm. longa.

Hab. in distr. Stirling, prope Gnarming, comm. *W. E. Blakell*.

The affinity of this species is with *A. Kingiana* Maiden and *A. deflexa* Maiden. It differs from the former in the compound inflorescence, the shape of the phyllodia, the free sepals and the petals; from *A. deflexa* it differs in the inflorescence, the shape of the phyllodia and the broader calyx-lobes.

Acacia Yorkrakinensis *C. A. Gardn.* sp. nov.

Section *Juliflora*.

Frutex 2-3 metralis altus; ramis erectis vel patentibus, gracilibus; ramulis angulatis, pruinosis, demum brunneo-purpurascens, nitentibus; phyllodiis erectis, oblongis vel oblongo-lanceolatis, paulo falcato-curvatis, glaucis, apice obtusatis vel acutis, interdum oblique mucronatis, basi breviter contractis, brevissime sed distincte petiolatis, rigidis, tenuiter longitudinaliter multi-striatis, costa centrale vix conspicua, marginibus prominentibus, crassis, purpurascens; stipulis nullis; pedunculis axillaribus vel terminalibus, binis vel racemosis precipue in partibus superioribus; spicis cylindratis, densis, quam pedunculi aequilongis vel brevioribus; calyce late cupuliformi, extus albo-pubescenti, breviter 5-lobato, lobis obtusis, ciliolatis, demum subliberis; petalis liberis anguste oblanceolatis, acutis, calyce duplo longioribus; legumine non viso.

Phyllodia 2-5 cm. (superiora minus), usque 1.2 cm. lata; pedunculi 1-1.3 cm. longi; spicae usque 1.7 cm.; petala 2.5 mm. longa.

Hab. in distr. Avon prope Yorkrakine, ca. 18 km. a Bungulla septentrionalem versus, in campis arenosis aridis, flor. in Aug. *Gardner*.

The species is very close to *A. signata* F. Muell., differing in the shorter and very much broader phyllodia which are never linear, nor have they the acuminate curved apex of the latter. It might be considered as a variety of *A. signata* but its habit, and the much shorter and broader distinctly pruinose phyllodia give it a very different appearance, and these differences are quite as distinct as those separating many other species of this large genus. The pods when obtained may possibly exhibit further differences. The lobing of the calyx is variable. In one specimen the calyx is very deeply lobed, while in another from the same locality the lobes are short and almost hemispherical. The Western Australian species of *Acacia* are in urgent need of revision.

CAESALPINIACEAE.

***Labichea teretifolia* C. A. Gardn. sp. nov.**

Frutex densus, submetralls altus, ramis ramisque appresso-pubescentibus, plusminusve intricatis: foliis 3, digitatis, sessilibus, lineari-teretibus, supra canalienlatis, subtus profunde unisulcatis, breviter pubescentibus, acriter pungentibus; racemis terminalibus vel axillaribus, panicifloris; bracteis ovato-lanceolatis, cymbiformibus, acutis, pubescentibus: sepalis 5, exterioribus extus sericeo-pilosis, interioribus minoribus, glabris: petalis flavis obovatis, obtusis vel retusis: staminibus 2, antheris subsessilibus, una breviori quam altera, uterque obtusis: ovario sessili, albo-villose, 2-ovulato: stylo glabro.

Frutex submetralls altus; folia usque 1.3 cm. longa, vix 1 mm. lata; pedicelli 4 mm. longi; sepala + 5 mm. longa; petala 5.5 mm. longa; anthera major 5 mm., minor 3.75 mm. longa.

Hab. in distr. Irwin, 60 km. a flumine Murchison septentrionalem versus, in arenosis aridis in fruticetis, flor. in August-Sept., *Gardner* 2575.

Affinity to *L. nitida* Benth., differing in the number of leaflets which is constantly three, narrow-linear and subterete, deeply sulcate underneath, in the much smaller flowers and the 2-ovulate ovary.

***Labichea eremaea* C. A. Gardn. sp. nov.**

Frutex nanus, diffusus vel caespitosus, vix 50 cm. altus, ramulis albo-pubescentibus; foliis 5, petiolo communi brevi; stipulis parvis, subulato-setaceis, persistentibus; laminis elliptico-lanceolatis, duris, valde concavis, marginibus involutis, crassis, breviter petiolulatis, in apicem pungentem attenuatis, basin versus angustatis, prominenter multinerviis, marginibus crassis, utrinque sparse pubescentibus: floribus saepius binis in axillis superioribus, rarius solitariis: pedicellis quam foliis brevioribus; sepalis 5, exterioribus glabris, planis; petalis obovatis, calycem subaequalibus: stamina 2, antheris inaequalibus, subsessilibus, una breviori quam altera utrisque obtusis; ovario sessili, albo-villoso, ovulis 2, stylo glabro.

Frutex vix 50 cm. altus; foliola usque 1.5 cm. longa; pedicelli 3-4 mm. longi; sepala 7 mm. longa; petala 8 mm. longa.

Hab. in distr. Austin prope Anketell, a vico Sandstone ca. 25 km. occidentalem versus, in arenosis aridis apertis, *Gardner* 2505.

Key to the Western Australian species of Labichea.

- A. Anthers equal; undershrub with almost simple stems; leaves not pungently acute 1. *L. punctata Benth.*
- B. Anthers unequal; branched shrubs with pungently acute leaflets (or leaves).
- a. Leaves pinnate with an elongated rhachis 2. *L. cassioides Gaud.*
- b. Leaves digitate or simple.
- a. Sepals 4; petals 4; glabrous shrub with mostly simple leaves 3-8 cm. long, or the leaflets 3 with the middle leaflet usually the longest, all rather broad 3. *L. lanceolata Benth.*
- . Sepals 5; petals 4 or 5; branchlets and leaves pubescent; leaflets 3 or 5, less than 2 cm. long.
- I. Leaves narrow-elliptical or elliptical-lanceolate with involute margins 4. *L. eremaea C. A. Gardn.*
- II. Leaves, terete or very slightly compressed, deeply grooved underneath 5. *L. teretifolia C. A. Gardn.*

PAPILIONACEÆ.

Gompholobium obcordatum Turcz. var. pachyphyllum C. A. Gardn. var. nov.

Fruticulus humilis divaricate ramosissimus, ramis ramulisque viscidissimis; foliis trifoliatis, petiolo brevissimo; foliolis parvis lato-cuneatis, retusis, glabris, crassis, supra convexis, viscosis, marginibus recurvis; stipulis minutissimis; floribus solitariis, terminalibus, pedicellatis; calyce glabro, viscoso, profunde subaequaliter 5-lobato lobis valvatis, acutis; petalis quam calyx vix longioribus, flavis; vexillo orbiculato, emarginato, alis minoribus, oblongis acutis, carina obtusa; ovario subsessili, ovato, glabro, ovulis 4, stylo incurvato, subaequilongo, crassiusculo, stigmatate minuto; legumine maturo depresso-globoso, glabro, duro.

Fruticulus circa 15 cm. altus; foliola 2-3 mm. longa et lata; pedicelli 3.5 mm. longi; calyx 6 mm. longus; vexillum 6 mm. longum, 7 mm. latum, carina 6.5 mm. longa.

Hab. in distr. Avon prope Yorkrakine, in fruticetis apertis arenosis, flor. m. Decem. et Jan. *Gardner.*

Mirbelia longifolia C. A. Gardn. sp. nov.

Frutex erectus, 1-2 m. altus, ramulis griseo-pubeseentibus, angulatis; foliis alternis, linearibus, petiolatis, exstipulatis, erectis vel subpatentibus, marginibus arcte revolutis, breviter mucronatis, supra convexis, laevis, uninervis, subtus bisuleatis; racemis terminalibus, elongatis, paucifloris, folia multo excedentibus, rhache angulato, pubescenti; pedicellis alternis, brevibus; bracteolis deciduis, verisimiliter setaceis; calyce campanulato, lobis valde inaequalibus, lobis superioribus majoribus late truncatis, ad apicem connatis, retusis vel emarginatis, lobis inferioribus ovatis, acutis; petalis flavis vexillo cuneato-orbiculare, alis dolabriformibus, carina obtusa; ovario breviter stipitato, ovoideo, glabro, 2-ovulato, stylo erecto, erasso, uncinato.

Frutex 1-2 m. altus; folia usque 4.5 cm. longa; calyx 9 mm. longus; segmenta postica 3.5 mm. longa; vexillum 9 mm. longum; alae 7 mm. longae, carina 6.5 mm. longa; ovarium cum stylo 7 mm. longum.

Hab. in distr. Avon prope Morawa, in fruticetis glareosis, flor. m. Septem. *Gardner* 2671 (Typus), necnon circa oppidulum Mullewa, in arenosis lapidosis, fl. m. August, *Gardner*.

Near *M. taxifolia*, but inter alia a much larger shrub with sparse and longer leaves, slender elongated racemes with fewer flowers and an angular rhachis closely pubescent and not villous.

Mirbelia taxifolia C. A. Gardn. sp. nov.

Frutex erectus, densus, ramis ramulisque cinereo-pubescentibus; foliis sparsis, raro apicem ramorum versus oppositis, linearibus, breviter petiolatis, exstipulatis, erectis vel patentibus, marginibus arcte revolutis, breviter mucronatis, supra sulcatis, viridibus, minute asperatis; racemis densifloris, terminalibus, folia multo excedentibus, rhache villosa; pedicellis brevibus, sparsis, bracteolis linearibus, dense ciliatis, acuminatis; calyce campanulato, sericeo, 5-nervis, segmentis valde inaequalibus, lobis superioribus majoribus late truncatis; petalis aurantiacis, vexillo cuneato-orbiculare, alis dolabriformibus, carina obtusa; ovario glabro, breviter stipitato, ovoideo, stylo erecto, glabro, erasso, apice uncinato; ovulis 2.

Frutex solemniter 1 m. altus; folia 1-1.7 cm. longa; calyx 9 mm. longus, segmenta postica (labium superum) 4 mm. longa, 6 mm. lata; vexillum 1.2 cm. ovarium cum stylo 8-9 mm. longum.

Hab. in distr. Coolgardie prope Karalee, in fruticetis arenosis apertis, flor. m. Septem. *Gardner*. 4875.

Affinity to *M. aotoides* F. Muell., *M. longifolia* C. A. Gardn. and *M. densiflora* C. A. Gardn.

Mirbelia densiflora C. A. Gardn. sp. nov.

Frutex erectus, densus, ramis ramulisque erectis, cinereo-vel albo-pubescentibus; foliis sparsis, densis, linearibus, erectis, breviter petiolatis, exstipulatis, marginibus arcte revolutis, breviter mucronatis, supra canaliculatis, viridibus, asperatis, subtus bisuleatis; racemis terminalibus, densifloris, brevibus, folia vix excedentibus, subspicatis, rhache villosa; floribus subsessilibus; bracteolis linearibus, dense hirsutis, acuminatis, quam flores brevioribus; calyce late campanulato, sericeo, enerve, segmentis subaequalibus, lobis superioribus ad medium connatis, omnibus acutis; petalis aurantiacis, vexillo cuneato-orbiculare, alis subaequalibus, dolabriformibus, carina brevior, obtusa; ovario subsessili, ovoideo, 2-ovulato, glabro, stylo erecto, uncinato, erasso, stigmatibus capitato.

Frutex 30 cm. altus; folia usque 1.3 cm longa; calyx 6.5 mm. longus, lobi 3.2 mm. longi; vexillum 10 mm. longum ac latum, alae 8.5 mm. longae, carina 7 mm.; ovarium cum stylo 6.5 mm. longum.

Hab. in distr. Coolgardie ad fines meridionali prope Young River, Gardner Jan. 1936.

The three species described above may be differentiated by the following key:

- A. Calyx very unequal, the two upper segments united almost to the summit into a truncate or emarginate lip.
 - a. Racemes slender, loose, the rachis angular and shortly pubescent; leaves 4-4.5 cm. long; shrub 1-2 metres high. *M. longifolia*
 - b. Racemes dense; rachis not angular, densely villous; leaves 1-2 cm. long; shrub less than a metre high *M. taxifolia*
- B. Calyx regular or almost so, the two posterior lobes united to the middle; leaves 1-1.5 cm. long *M. densiflora*

With the exception of *M. oxyclada* F. Muell., a species referred with some doubt to this genus, the three species described above differ from all other Western Australian species in the number of the ovules which is constantly two. This brings the group close to *M. reticulata* and *M. aotoides*, species restricted to Queensland and New South Wales. The habit of the plants is much like that of *Oxylobium* § *Podolobium*, but the ovary in each case is completely 2-celled when young. The character upon which *Mirbelia* is established, namely the longitudinal division of the pod into two cells is not always readily observable in flowering specimens. In *M. dilatata* and *M. floribunda* it is at once apparent, but in most of the other Western Australian species the partial intrusion of the false dissepiment from either one or both sutures is often very imperfect and easily overlooked. The development of this false dissepiment requires further study. In *M. racemosa* Turcz., for example, it is entirely absent, and what was described as such by Turczaninow and Bentham is in reality a development of cellular tissue characteristic of *Callistachys* and some species of *Oxylobium*, e.g. *O. graniticum*. *M. racemosa* is in fact a true *Oxylobium*, and was described by the author under the name *Oxylobium Bennettsii* in this Journal. The type species has been matched with the type number of *Mirbelia racemosa* at Kew, and the two are identical.

***Oxylobium racemosum* (Turcz.) C. A. Gardn. comb. nov.**

(*Mirbelia racemosa* Turcz.; *Oxylobium Bennettsii* C. A. Gardn.)

***Mirbelia seorsifolia* (F. Muell.) C. A. Gardn. comb. nov.**

The pod of this plant is typical of *Mirbelia*. Mueller described the ovules as being two in number, but in reality 4 and 6 ovules are commonly present. The species had already been regarded as an anomalous *Gastrolobium*.—*Gastrolobium seorsifolium* F. Muell.

Gastrolobium pauciflorum *C. A. Gardn.* sp. nov.Section *Axillares*.

Frutex divaricate ramosus, ramis teretibus, junioribus cano-pubescentibus; foliis oppositis, petiolatis, obovatis vel lato-oblongatis, obtusis acutis vel mucronatis, subplanis, glabris, glaucis, rigidis, coriaceis, prominenter pallide reticulatis; stipulis setaceis, fuscis; floribus 1-3, axillaribus, breviter pedicellatis; bracteolis parvis, rigidis, cuneatis, tridentatis, pubescentibus, pedicelli excedentibus; calyce dense sericeo-pubescente, lobis quam tubus brevioribus, 2 superioribus truncatis vel emarginatis, latioribus; petalis quam calyx vix duplo longioribus, vexillo flavo, latissimo emarginato, alis vix brevioribus, earina purpurascenti obtusissima; ovario longe stipitato, dense villosa, 2-ovulato, stylo falcato, lateraliter compresso, glabro.

Frutex forsitan 50 cm. altus; folia usque 2 cm. longa, 8-10 mm. lata; petioli 3 mm. longi; pedicelli 2-3 mm. longi; calyx 5 mm. longus; vexillum 1 cm. longum ac latum.

Hab. in distr. Irwin, ca. 9 km. a Three Springs occidentalem versus, in fruticetis apertis arenosis, fl. m. Septem. *W. E. Blackall* 4895.

Affinity to *G. obovatum* Benth., differing in the flat, not complicate leaves, fewer-flowered clusters without any evident peduncle, the shorter pedicels etc. The flowers are frequently solitary in the axils.

Gastrolobium Bennettsianum *C. A. Gardn.* sp. nov.Section *Racemosa*.

Frutex erectus vel patens, 1 m. altus, ramis ramulisque angulatis, cinereo-puberulis; foliis ternis vel oppositis, breviter petiolatis, oblanceolato-complicatis, apice recurvatis, obtusis, pungentibus mucronatis, coriaceis, glaucis, erectis; stipulis setaceis, firmis, petiolo aequilongis; racemis terminalibus vel axillaribus, folia multo excedentibus, densi-floris, rhache puberula; bracteolis ovato-lanceolatis, obtusis; calyce parce pubescente, segmentis posticis altius connatis; vexillo reniforme-orbiculare, alis obtusissimis carina aequilongis; ovario anguste-ovoideo, villosa, stipitato, stylo incurvo, lateraliter compresso, inferne villosa, ceterum glabro.

Folia 2 cm. longa; stipulae fuscae, 2-2.5 mm. longae; racemi 4-5 cm. longi; pedicelli 1-1.5 mm. longi; ovarium 2 mm. (stipes 2.5 mm. excepta); stylus 1 mm. longus.

In collibus glareosis regionis *Eucalypti reduncae* distr. Avon proprium. Adest ad Yorkrakine prope Tamuin meridiem versus ad usque Wagin, fl. m. Septem. Typus est North Bungulla, *Gardner* Sept. 1936.

Collegae assiduo in herbis venenatis investigandis, excellentissimo viro Haroldo Gulielmo Bennetts, scientiae veterinariae doctori, gratissimo dedicatum.

This species has a close affinity to *G. microcarpum* Meissn., and *G. floribundum* S. Moore. It differs from both, however, in the recurved apex of the leaf which is furthermore distinctly pungently mucronate. In this respect it closely resembles *G. obovatum* Benth., with which it might easily be confused when not in flower or fruit, but in *G. obovatum* the leaf is always acute or acuminate. From *G. microcarpum* and *G. oxylobioides* Benth. it differs in the complicate leaves, as well as in the shape of the leaf blade which does not taper to the apex. The leaf texture, and a cross section of the same is much like that of *G. floribundum*, but the shape, as well as the floral characters are quite different.

The species is common throughout the area of its habitat which extends eastwards to Koudiun, and it appears to be constantly associated with gravelly hills and rises, usually in association with *Eucalyptus redunca* var. *elata*. In common with the other species of the § *Racemosae* it is highly toxic to both sheep and cattle.

***Gastrolobium glaucum* C. A. Gardn. sp. nov.**

Section *Racemosae*.

Frutex erectus vel diffusus, 50 dm. altus; ramis ramulisque vix angulatis, cinereo-pubescentibus demum glabrescentibus; foliis ternis, subsessilibus aut brevissime petiolatis, late obovatis, coriaceis, conspicue retinervis, planis, obtusis, glaucis, pungento-mucronatis, ad basin obtusis, costo centrale subtus valde prominente: stipulis setaceis, fuscis; racemis terminalibus, pluri- et densifloris, villosis, folia multo excedentibus; bracteolis lanceolatis, deciduis; pedicellis villosis; calyce pubescente, segmentis posticis altius connatis, emarginatis, ceteris ovato-deltaideis; vexillo reniforme-orbiculare, alis acutis vel subobtusis, carina excedentibus; ovario ovoideo, villosa, longe stipitato; stylo compresso, glabro, ovulus 2.

Folia usque 2 cm. longa et 1.2 cm. lata; stipulae 4 mm. longae; racemi spiciformi, 2-3 cm. longi; pedicelli 1.5 mm. longi; calyx 4-5 mm. longus, lobi postici vix 2 mm. longi, reliqui 1-1.5 mm. longi; ovarium 2 mm. longum, stipes 2 mm.; stylus 2 mm.

In distr. Avon prope Wongan Hills, in arenoso lutoso apertis, flor. m. August-Septem. *Gardner* Sept. 1924.

Closely related to *G. rotundifolium* Meissn., from which it may be distinguished by the flat, not undulate, very glaucous leaves, which are widely obovate with dark-coloured points, the conspicuous reticulations, the very deciduous bracteoles, the united and obtuse posterior calyx lobes and the long stipitate ovary. The species is toxic to stock.

RUTACEÆ.

***Phebalium lineare* C. A. Gardn. sp. nov.**

Frutex semimetralis altus; ramulis erectis, lepidotis, non glandulosis; foliis linearibus, erectis, planis, crassis, apice obtusis, basin versus sensim angustatis, breviter petiolatis, glabris vel minute et parce lepidotis; pedunculis axillaribus, solitariis, erectis, sursum clavatis, bracteolis 2 lanceolato-subulatis praeditis; floribus albis; calycis dentibus deltaideis, erectis vel patentibus, parvis; petalis valvatis, ovato-oblongis, obtusis, extus lepidotis, intus glabris, crassis; filamentis quam petala dimidio brevioribus, albis, lanceolatis, crassis, apice subulatis; carpidiis glabris.

Frutex 50 dm. altus; folia usque 2.5 cm. longa; pedunculi 5 mm. longi; petala 4-5 mm. longa; filamenta 2-2.5 mm. longa.

Hab. in distr. Eyre, ad montem Ragged prope Israelite Bay, in lapidosis fruticetis, flor. m. Oct. *Gardner* 2864.

Affinity to *P. rude*, differing in the entire linear leaves.

***Phebalium ambiguum* C. A. Gardn. sp. nov.**

Fruticulus humilis semimetralis altus, caulis erectis, ad ima basi ramosis, cortice lepidote tectis, teretibus, ramis ramulisque erecto-patentibus, lepidote-stellatis; foliis linearibus, brevissime petiolatis, approximatis, coriaceis, supra scabriusculis vel asperatis, obtusis, marginibus arcate revolutis, enerviis, subtus lepidote-stellatis; floribus solitariis, terminalibus sessilibus; calyce parvo,

breviter dentato, patente; petalis ovato-oblongis, obtusis, extus lepidotis; filamentis glaberrimis, linearibus, petalis brevioribus; carpidiis lepidotis.

Microcybe pauciflora var. *uniflora* D. A. Herbert.

Fruticulus 50 dm. altus; folia 4-5 mm. longa.

Hab. in distr. Coolgardie, prope.

Carrabin, in arenosis lutosis, fl m. Oct. Gardner; pr. Yellowdine, W. E. Blackall 1937, pr. Hatter's Hill, Blackall 1867; in distr. Avon juxta Ballidu in fruticetis, Gardner.

With the habit and appearance of a *Microcybe*, with which it might easily be at first sight mistaken, this species, together with the following, are distinguished from all other Western Australian species by the solitary sessile or subsessile flowers.

Phebalium clavatum C. A. Gardn. sp. nov.

Frutex erectus, circiter 1 m. altus, pluri-ramosus, ramulis foliosis, sparse glanduloso-tuberculatis, dense argenteo-lepidotis; foliis late et obtuse clavatis, valde obtusis, petiolatis, dense lepidotis, glandula minuta terminale praeditis; floribus albis, solitariis, sessilibus; calyce parvo, acute 5-dentato, dentibus erectis, tubo subaequalibus vel longioribus; petalis leviter lateraliter imbricatis, extus dense lepidotis; staminibus subaequalibus, subexsertis, filamentis tenuibus; carpellis 5, ovoideis, obtusis, dense stellato-lepidotis.

Frutex circ. metralis altus; folia 3-4 mm. longa; calyx 2.5 mm. longus ac latus; petala 4 mm. longa.

Hab. in distr. Coolgardie, in arenoso-lutosis, prope Widgiemooltha, flor. m. November. *Gardner*.

MUIRIANTHA C. A. Gardn. nom. nov.

Mueller, in 1887, described under the name *Chorilaena Hassellii*, a plant collected by A. Y. Hassell from the west end of the Stirling Range. This was raised by me to generic rank in this journal xix., 83 (1933), under the name of *Muiria Hassellii* (F. Muell.) C. A. Gardn. A short time before this, however, N. E. Brown bestowed the name *Muiria* on an Aizoaceous plant, so that a new name has to be found for the local genus, and the name *Muiriantha* is here proposed. The description will be found under the reference quoted above.

EUPHORBIACEÆ.

Euphorbia boöphthona C. A. Gardn. sp. nov.

§ *Eremophila*.

Herba perennis, radice crasso, contorto, albo-corticato; caulibus dichotomo-divaricatis, glabris, lactiferis; foliis lineari-lanceolatis vel lineari-bus, acutis, remote et acute denticulatis, in petiolis brevibus attenuatis, inferioribus alternis, superioribus oppositis vel quasi oppositis, omnibus plusminusve caducis; stipulis nullis; cyathiis axillaribus, solitariis vel binis, breviter pedunculatis vel subsessilibus; pedunculis non articulatis; glandulis 4 vel 5, latis, exappendiculatis; ovario glabro, laevi, stylis brevissimis, crassis, biramosis; fructibus subglobois, trilobis, laevibus, seminibus cylindraccis, dense sclero- et albo-papillois; carnuculo magno, pileiforme, margine discoideo, sub semine constricto.

Planta 16-20 cm. alta; folia usque 3.5 cm. longa, 5 mm. lata; cyathium vix 2 mm. longum; stipes 4 mm.; fructus 6 mm. longus; semina 4.5 mm. longa, 2.75 mm. lata, carmeulus 1.7 mm. latus.

Species eremaea Australiae occidentalis aream amplam occupavit in locis alluviis lutosus (quos dicunt "Creeks") e.g. Jimba Jimba ad fluminem Gascoyne River, *Gardner* n. 3302 (Typus); a Cue occidentalem versus prope "Stock Route," in locis similibus *Gardner*; a Laverton orientalem versus Warburton Range, *E. de C. Clarke*, fruct. m. July-August.

The affinity of this species is with *E. clutioides* Forst., from which it can be distinguished at once by its lower more widely and dichotomously branched habit, by its acute leaves, and by the seeds which are densely covered with large hard and white papilla-like excrescences narrowed towards the base, and, furthermore, the caruncle is almost hat-shaped, and its lower disciform end is separated from the seed by a short and narrow stalk or constriction.

Euphorbia boöphthona is a cyanogenetic plant toxic to stock, especially hungry travelling stock, and has accounted for the death of thousands of sheep and cattle in the Gascoyne and Murchison districts, especially in the vicinity of Jimba Jimba, the Lyons River, and in places north-west of Cue.

***Euphorbia clutioides* (Forst f.) C. A. Gardn. comb. nov.**

(*Croton clutioides* Forst f. Prodr., 92 (1786).)

(*Euphorbia tannensis* Spreng., Fl. Hal. Mant. 42 (1807).)

(*E. Vieillardii* Baill. Adansonia ii. 212 (1862).)

(*E. eremophila* A. Cunn ex Hook. in Mitch. Trop. Austr. 348 (1848).)

Its range extends from the Island of Tanna in the New Hebrides to Western Australia, embracing New Zealand and the northern half of Australia. *E. boöphthona* is so far only known from Western Australia, but it appears probable that its range will be found to extend into Central Australia. *E. clutioides* does not appear to be toxic to stock.

Key to the species of the Sect. *Eremophila* occurring in Western Australia.

A. Seed smooth or covered with minute whitish tubercles; caruncle embracing the end of the seed.

a. Involucral glands fimbriate-ciliate, prominent; seeds smooth; leaves acute ..

E. Finlaysoni J. M. Black.

b. Involucral glands entire, broad, inconspicuous; seeds granular rugose or nearly smooth; leaves mostly obtuse ..

E. clutioides (Forst. f.) C. A. Gardn.

B. Seeds prominently sclero-papillose with elongated club-shaped white excrescences; caruncle separated from the seed by a thin but distinct stalk; involucral glands exappendiculate

E. boöphthona C. A. Gardn.

E. Stevenii Bail., has not yet been recorded from Western Australia. It belongs to the above Section.

RHAMNACEÆ.

Cryptandra grandiflora C. A. Gardn. sp. nov.

Frutex ramosissimus, ramis divaricatis, ramulis novellis appresso-pubescentibus, demum glabris; foliis plusminusve subfasciculatis, oblongis vel oblongo-obovatis, petiolatis, basin versus sensim angustatis, apice obtusis, mucronulo recurvo praeditis, novellis complicatis, dense sericeo-pubescentibus, adultis supra olivaceis et glabrescentibus, subtus sericeo- et appresso-pubescentibus; stipulis setaceis demum deciduis; floribus albis, in pseudo-capitulis terminalibus aggregatis; bracteis ovato-orbicularibus vel late obovatis, obtusis vel retusis, mucronatis, marginibus ciliatis, quam tubum calycis brevioribus; bracteolis spathulato-obovatis bracteis subaequantibus, toto dorso piloso; calycis tubo anguste campanulato, extus paucis pilis tenuis sericeis adpressis, lobis angusto-triangularibus, acutis, intus glabris et prominenter carinatis; petalis unguiculatis, cucullatis; disco angusto, annulari minute pubescente; ovario vertice albo-piloso; stylo crasso, quam calyx brevior.

Frutex forsan metralis altus; folia 6-15 mm. longa, majora in ramulis novellis; bracteae bracteolaeque usque 5 mm. longae; calyx 6-7 mm. longus, lobi circ. 2.5 mm. longi; petala .75 mm. longa.

Hab. in distr. Irwin ab Carnamah occidentalem versus, fl. m. Sept. *E. M. Barker*, per *W. E. Blackall*.

Affinity to *C. leucophracta*, differing in the larger leaves, larger and shortly but distinctly pedicellate flowers which are more numerous in the cluster, in the vestiture of the calyx which consists of fine silky hairs, and the longer and more acute calyx-lobes.

BLACKALLIA C. A. Gardn. gen. nov.

Calyx urceolatus vel ovoideus, tubo ultra discum longe producto, lobis 5, connatis, erectis, acutis; petala 5, breviter stipitata, in ore calycis inserta, cucullata; stamina 5, cum petalis inserta, filamentis breviter liberis; antherae versatiles, oblongae, rimis 2, longitudinaliter dehiscens discus hypogynus fundo tubi calycis adnatus, annularis, margine libero, integro vel sinuato; ovarium ovoideum vel obovoideum, fundo calycis rectum breviter attenuatum, stigmate 3-lobo. Capsula ovoidea vel cylindracea, libera, coriacea, 3-valvis, coccis crustaceis; semina erecta, cylindracea; funiculo crasso-turbinato vel subcupulato insidentia.

Frutices ramosissimi, ramulis alternis, spinescentibus; folia fasciculata, parva, stipulae fuscae, parvae, flores in ramulos breves subracemosi vel fasciculati, breviter pedicellati; bracteae imbricatae flores cinctae vel nullae.

Amicissimo clarissimoque viro, Gulielmo Edwardo Blackall, scientiae medicinae doctori, novum hoc genus dedico; qui socius humanissimus et collega de rebus Australiae occidentalis botanicis maxime eruditus, saepe saepius partes huius regionis incultas mecum peragravit.

A genus closely related to *Cryptandra*, of which it has many of the characteristics, but the completely superior ovary and the small annular free-margined disc are characters of the Tribe *Colletieae*, of which *Blackallia* is typical except that the branchlets and leaves are alternate and not opposite. It is close to *Discaria*, differing in the erect \pm connate calyx-lobes, the capsular fruit, as well as in the arrangement of the branchlets and leaves. The calyx does not appear to spread its lobes, which in all the specimens examined are \pm connate and erect.

1. *B. connata* (C. A. Gardn.) C. A. Gardn. comb. nov.

(*Cryptandra connata* C. A. Gardn. in Jour. Roy. Soc. West. Austr. xxiv. 80. (1928).)

Additional localities are—Near Payne's Find, *W. E. Blackall*; between Lawlers and Sandstone *Gardner*.

2. *B. biloba* C. A. Gardn. sp. nov.

Frutex 30 cm. altus, ramis divaricatis, ramulis alternis spinescentibus; foliis fasciculatis, linearium-cuneatis, basi attenuatis, apice bilobatis, lobis obtusis, glabris, supra concavis vel plusminusve complicatis, glabris; floribus singulis vel fasciculatis e fasciculi foliorum, longe pedicellatis; bracteis nullis; calyce gambro, cylindrico, basi saecati, lobis deltoideis, acutis, erectis, petalis subsessilibus, cucullatis, calycis limbi semi-aequantibus; disco tenui glabro; ovario glabro, obovoideo, stylo recto, minute trilobato.

Frutex 30 cm. altus; folia usque 6 mm. longa, 1.5 mm. lata; pedunculi 4 mm. longi; calyx 5 mm. longus, lobi vix 2 mm.

Hab. in distr. Irwin inter vicum Northampton et Lynton, flor. m. Sept. *W. E. Blackall* 4517.

Differs from *B. connata* in the long pedunculate flowers, the absence of bracts, narrower and entirely glabrous calyx, and in the shape of the leaves.

MYRTACEÆ.

Eugenia Stokesii C. A. Gardn. sp. nov.

Arbor 7-10 m. alta, glabra, ramulis teretibus; foliis ovato-oblongis vel ellipticis, petiolatis, basin versus attenuatis, apice obtusis vel subaentis, crassis, rigidis, glaucis, irregulariter penninervis, vena intramarginali ab margine remota, nervis secundariis reticulatis; cymis axillaribus, paucifloris (4-7-) floribus; calyce campanulato, lobis plusminusve inaequalibus, late hemisphaericis, persistentibus, marginibus tenuibus, tubo supra ovarium in disco concavo staminifero producto; petalis orbicularibus, albo-marginatis, delapsis singulis; staminibus quam petala longioribus; ovulis circiter 10.

Arbor 7-10 m. alta; folia 7-12 cm. longa, 5-6 cm. lata; petioli 4.6 mm. longi; pedicelli 3 mm. longi; calyx 1 cm. longus; petala 9 mm. longa, 10-11 mm. lata.

Hab. in regione tropica ad Weber Range, ad finem orientalem territorii Australiae occidentalis, flor. m. July, *S. J. Stokes* n. 51. Boundary Survey of Western Australia, 1937.

Affinity to *E. pendens* Duthie, but with glaucous thick broader and obtuse leaves, the calyx-lobes not reflexed after flowering but remaining erect, short pedicels and campanulate calyx. Among its Australian congeners it is closest to *E. myrtifolia* Sims, but the leaves are much broader and with much coarser venation, and the calyx-lobes are very obtuse.

Eucalyptus megacornuta C. A. Gardn. sp. nov. (§ *Cornutae*).

Arbor 7 metralis alta, ramis erecto-patentibus, cortice laevi, cinereo-brunneo; foliis primariis non visu; foliis ordinariis alternis, oblongo-lanceolatis, concoloribus, nitenti-viridibus, petiolatis, acuminatis vel obtusis, venis secundariis inconspicuis, vena intramarginali juxta margini; pedunculo elongato, pendulo, lorato, apicem versus incrassato, flores 2-3 sessiles gerente; calyce elongato-campanulato, apicem versus dilatato, multo-costato; operculo cylindrico, verrucosissimo, obtuso, quam calyx duplo longiore, basi abrupte dilatato; staminibus multi-seriatis, viridibus, erectis vel flexuosis, filamentis

quadrangulatis, glandulosis; antheris longitudinaliter dehiscentibus; fructu magno, campanulato vel hemisphaerico-campanulato, rugoso-costato, margine angusto; disco hemisphaerico-depresso, striato, valvis crassis, inflexis, leviter exsertis.

Folia usque 8 cm. longa, 2.5 cm. lata (petiolus 1 cm. lamina 7 cm.); pedunculus usque 4 cm. longus, 1.7 cm. latus; calyx 3 cm. longus, 2.2 cm. latus; operculum 5 cm. longum, ad basin 2 cm. latum; fructus 3.5 cm. longus, 3.2 cm. latus.

Hab. in distr. Coolgardie ad fines australes prope Ravensthorpe septentrionem versus in elivis glareosis, flor. m. November, *Gardner*.

This species is very close to *E. Burdettiana* Blakely, differing in its arborescent proportions, its widely branched habit, much larger buds and flowers, the markedly verrucose and broadly dilated operculum, the larger costate fruits, and the broader leaves. *E. Burdettiana* is a small mallee inhabiting the quartzite hills of the south coast, between Hopetoun and the Fitzgerald River. It rarely exceeds 2 metres in height, and becomes smaller towards the western limits of its habitat. The fruits of *E. Burdettiana* are much smaller than those of *E. megacornuta*, smooth or uncostate, and almost spherical. It is very close to *E. cornuta*.

***Eucalyptus erythrandra* Blakely.**

In this Journal xix 88 (1933) I described as a new variety of *E. angulosa* Schau (var. *robusta*), a plant collected by H. Steedman near Kundip. I have since received, through the Conservator of Forests, specimens of this plant collected by Mrs. Daniells of Hopetoun which exhibit a perfect series embracing on the one hand *E. tetraptera* Turcz., and *E. angulosa* Schau. on the other. Amongst the intermediate forms is typical *E. erythrandra*, which I consider to be a hybrid. The evidence in favour of this theory is quite clear.

***Eucalyptus Brockwayi* C. A. Gardn. sp. nov.**

Arbor 25 metralis alta, cortice laevi, albo vel salmoni-colorato, deciduo, ramulis acutangulis; foliis alternis, coriaceis, falcato-lanceolatis vel lineari-lanceolatis, concoloribus, utrinque nitentibus, punctatis, venis lateralibus pennato-patentibus, vena intramarginali a margine remota; umbellis axillari-bus vel lateralibus, solitariis, patentibus; pedunculo leviter compresso; pedicellis brevibus angulosis vel subteretibus, calyceem multo brevibus; tubo calycis paene brevicylindrico, ad basin obtusissimo; opereulo hemisphaerico vel late ovoideo; staminibus ante expansionem inflexis; stylo recto; fructu parvo, costato, urceolato-globoso, apice contracto, margine elevato; valvis profunde inclusis; seminibus fertilibus subovatis, compressis, laevibus, nigrescentibus.

Folia usque 10 cm. longa, 1.2 cm. lata; pedunculis 1 cm. longis; pedicellis 1 mm. longis; calycis tubus 4 mm. longus; operculum 1.7 mm. longum; fructus 6 mm. longus, 5 mm. diametrus.

Hab. in distr. Coolgardie, prope Norseman, in eucalyptetis lutosis, G. E.; *Brockway* et C. A. *Gardner*. 15. Decem. 1940 n. 5598.

Affinity to *E. ovalaris* Maiden, differing in the venation of the leaves, the much shorter pedicels, the very obtuse operculum and globular-urceolate fruits. The fruit is much like that of *E. Flocktoniae* Maiden, but the operculum is very different. It is probably also close to *E. Cooperiana* F. Muell. An examination of the immature anthers indicates that the species

may belong to the § *Platyantherae*, but this is not certain. It is also not always possible to clearly define the species of this Section, since in some there is a definite approach to the § *Macrantherae*. The anthers as seen are short, and the dehiscence appears to be by wide lateral slits, but in the absence of flowering material I think it is perhaps best to group this species, together with *E. ovalaris* and *E. Flocktoniae* in the § *Platyantherae*.

The species, which attains a height of 80 feet, has a perfectly smooth salmon-coloured or whitish bark which in fracture is blood-red and gummy. It is fairly high in tannin. The heartwood is reddish like that of *E. salmonophloia*, and the two trees look much alike in the field. The species is named out of compliment to George Ernest Brockway, Divisional Forests Officer at Kalgoorlie, whose collections of *Eucalyptus* in his district, and the interest he has taken in the trees of the area, have added much to our knowledge of the genus *Eucalyptus* in eastern areas.

***Eucalyptus brachyphylla* C. A. Gardn. sp. nov.**

Arbor parva, cortice aspero persistente in parte trunci inferiore, deinde in ramis laevi et deciduo, ramulis pruinosis, teretibus; foliis oppositis, breviter sed distincte petiolatis; laminis ovatis vel ovato-lanceolatis, breviter acutis, basi obtusis, glaucis, punctatis, venis lateralibus obscuris, vena intramarginale a margine valde remota; umbellis paucifloris (5-7) axillaribus vel in paniculas breves terminales et laterales collectis; pedunculis tereti-compressis, pedicellos longitudine excedentibus; alabastris obovoideis, apiculatis vel rostrato-acutis, longitudine pedicellorum vel longioribus; calycis tubo longitudine operculi vel longiore; fructibus cylindraccis, coestatis, truncatis, apici vix constrictis, marginibus tenuis, quadriloculatis; valvis profunde inclusis, deltoideis.

Arbor altitudine 4 m., cortex in laminis duris secedens; folia pleraque 3-4 cm. longa, usque 2.5 cm. lata; pedunculi 1 cm. longi; pedicelli 3 mm. longi; operculum (in statu immaturum) 2.5 mm. longum; fructus 5 mm. longus, 3.5 mm. latus.

Hab. in distr. Coolgardie, prope Lake Cowan occidentalem versus, juxta Binjaryinina, G. E. Brockway, July, 1940.

Near to *E. Kruseana* F. Muell., with which it is associated, differing in the distinctly petiolate ovate to ovate-lanceolate rather acute and larger leaves, and in the longer and differently shaped fruits which are not, or very slightly constricted at the summit.

***Eucalyptus Formani* C. A. Gardn. sp. nov.**

Arbor 10 m. alta, cortice cinerascete, rugoso, in trunco ramisque persistente, ramis ultimis laevis; foliis primariis erectis, angusto-linearibus, crassis, fere semiteretibus, glaucis vel pruinosis, uncinato-acuminatis valde punctatis, utrinque subcanaliculatis; foliis ordinariis angusto-linearibus, rectis vel leviter falcato-curvatis, erectis, distincte petiolatis, apice uncinato-acuminatis, costa centrale utrinque impressis, ceteris enerviis, viridibus, glanduloso-punctulatis; umbellis axillaribus, 5-8-floris; pedunculo tenno, apicem versus incrassato; pedicellis semiteretibus, quam alabastrum brevioribus; calyce hemisphaerico-turbinato, glanduloso, quam operculum conicum acuminatum brevioribus; filamentis inflexis, antheris parvis, orbicularibus (maturis non visibus); fructu globoso-hemisphaerico, laevo, margine elevato, disco concavo, valvis deltoideis, inclusis.

Folia primaria 3-3.5 cm. longa, .75 mm. lata; folia ordinaria 5-7 cm. longa, 2 mm. lata, raro 3 mm. lata; pedunculus 8 mm. longus; pedicellus 3.5-4 mm. longus; calyx 2 mm. longus; operculum 3-4.5 mm. longum; fructus 4.5 × 2.5 mm.

Hab. in distr. Coolgardie ad fines boreali prope "Die Hardy Range," a vico Southern Cross, 175 km. septentrionem versus in fruticetis apertis arenosis, *F. G. Forman* et *R. S. Matheson*, July, 1940.

Although flowers have not been seen, this species can be definitely assigned to the §*Platyantherae*. It is close to *E. Kochii* Maiden & Blakely, but is a fairly large tree with the bark of *E. longicornis* *F. Muell.*; the leaves however are narrower and conspicuously oil-dotted with a ± impressed midrib, the peduncle is more slender and elongated, the calyx much shorter and hemispherical-turbinate, and the operculum elongated ovoid-rostrate or ± acutely conical with an erect beak which however is variable in length. The fruit is not as long as broad, and the deltoid valves are not exerted. The primary leaves are quite unlike anything known in the genus, being almost terete.

This species commemorates the name of Francis Gloster Forman, Government Geologist of Western Australia, who brought me the first specimens of this plant.

Eucalyptus orbifolia *F. Muell.*

I have received from Mr. G. E. Brockway, Divisional Forests Officer at Kalgoorlie, through the Conservator of Forests, (S. L. Kessell, Esq.), complete material of this species from the Hospital Rocks (West of Mulline), and from Pigeon Rocks north of Bullfinch. Considering the interest that has surrounded this long lost species, of which only the small type specimen in the Kew Herbarium was previously known, the re-discovery of the species is of exceptional interest. The following description is taken from Mr. Brockway's specimens:—

Mallee, attaining a height of 25 feet, although usually about 18 feet high (Brockway); stems 5-6 cm. thick, with a warm red flaky striated thin persistent bark with decorticates leaving a pale green bark between the strips, heartwood pale red, closely grained. Branchlets reddish-pruinose, terete. Leaves alternate, broadly obovate-orbicular, shortly tapering at the base into a slender petiole of 1.5-2 cm., the lamina 3-7 cm. long and about of equal breadth or even broader, obtuse to reflex, glaucous, rather prominently veined, the secondary veins roughly parallel but remote, the intramarginal vein distant from the margin. Peduncles axillary or lateral, erect-spreading, straight, pruinose or reddish, slightly 2-angled, slightly thickened towards the apex, 1.5-2.5 cm. long, bearing an umbel of from 2 to 5 flowers; pedicels thick, subterete, 5-9 mm. long, divaricate; calyx-tube almost hemispherical, but shortly tapering into the pedicel, 5 mm. long, and 8 mm. broad; operculum hemispherical-conical, not much longer than the calyx-tube, usually about as long, longitudinally striate, the striae not very conspicuous, glaucous, as well as the calyx and pedicel; stamens pale yellow, numerous, the filaments flexuose in the bud, 5-6 mm. long; anthers ovate, opening outwards in longitudinal slits, the gland small, dorsal; style thick, conical, thicker than in any other species observed. Fruit hemispherical-campanulate, 1 cm. long, 1.7 cm. broad, smooth or striate, pruinose-glaucous, the disc broad and flat, the valves subulate-deltoid, prominently exerted; seeds black, triangular-ennate, not winged. *E. Websteriana* Maiden, is very close to this species, and perhaps a variety only.

Baeckea leptospermoides C. A. Gardn. sp. nov.

Frutex erectus, metralis altus, glaber, ramulis strictis, erectis, teretibus; foliis erectis, petiolatis, oblongis, crassis, planisque, obtusis, basi breviter contractis rotundis, petiolis tenuibus; floribus solitariis, albis; pedicellis axillaribus, quam folia multo longioribus; bracteolis 2, late ovatis, acutis, carinatis, a medio pedunculi insertis; calyce late cupuliformi, lobis quam tubum brevioribus, semiorbicularibus, marginibus tenuibus, albis; petalis quam calycis tubum triplo longioribus, orbicularibus, albis; staminibus 25, annulo undulato disco margine sinuato insertis, lobis disci extra stamenes processus subulatos gerentibus, aliqui staminibus regulariter dispositis, subaequis, quam petala duplo vel triplo brevioribus, filamentis teretibus, tenuibus, incurvis, antheris dorsifixis, longitudinaliter dehiscens, glandula albida, conspicua, globosa, quam anthera dimidio vel brevior; ovario triloculari, ovulis numerosis, placentam peltatam affixis, stylo brevi, filamentis aequante.

Frutex 1 m. altus; folia usque 5 mm. longa; calycis tubus 4.5 mm. longus ac latus. lobi 1.5 mm.; petala 4 mm. diam.

Hab. in distr. Coolgardie prope Karalee, in fruticetis arenoso-glarcosis, flor. m. Sept. Gardner. (Typus.) Prope Merredin, E. H. Wilson et D. A. Herbert.

Affinity to *B. crassifolia* var. *icosandra*, F. Muell, differing in the number of stamens and the lobed staminal disc which bears about 20 setae or subulate processes external to the stamens opposite each petal. In this latter respect it resembles *B. Maidenii* Ewart and White.

Astartea clavifolia C. A. Gardn. sp. nov.

Frutex metralis altus, glaber, multi-ramosus, ramulis erectis, densis; foliis ovato-clavatis, leviter compressis, distincte petiolatis, apice basique obtusis; floribus axillaribus, pedicellatis, calycis tubo turbinato, laevo, lobis suborbicularibus; petalis quam lobi calycis fere triplo longioribus, orbicularibus, roseo-albis; phalangibus distinctis, circiter 8-antheras gerentibus, apicem versus attenuatis; filamentis brevibus, tenuibus, plusminusve incurvis; antheris ovatis, longitudinaliter dehiscens; disco lato, concavo; ovario 2-loculato, ovulis in loculis 6, in annum lateraliter dispositis.

Frutex metralis altus; folia 1.5-2.5 mm. longa, usque 1.2 mm. lata; petioli .5 mm. longi; pedicelli 2 mm. longi, a medio articulati; bracteoli 1.3 mm. longi; calycis tubus 2.5 mm. longus, lobi 1 mm. longi; petala 2.5 mm. diam.

Hab. in distr. Avon prope Maya, in litosis arenosis, flor. m. Septem. Gardner 2704.

Affinity to *A. clavulata* Turcz. and *A. fascicularis* (Labill.) D. C., differing in the 2-celled ovary, the much shorter and broader clavate leaves which are never clustered, as well as in other minor features.

CALYTHROPSIS C. A. Gardn. gen. nov.

Myrtaceae-Chamaelaucieae.

Calycis tubus obovoideus, 4-gonnis, ovario adnatus, segmenta vel sepala nulla; petala 4, integra, patentia, decidua. Stamina indefinita, numerosa, pluriseriata, libera; filamenta glabra, filiformes; antherae versatiles, loculis parallelis, longitudinaliter dehiscens, connectivo glandula parva, globosa, appendiculato. Ovarium inferum, calycis tubo subaequale, 1-loculare; ovula

2, erecta, placenta filiformi e fundo ovarii oriunda et usque ad apicem extensa, collateraliter affixa; stylus filiformis, glaber, stigmatibus parvo, capitato. Fructus siccus, indehiscens, calycis tubo adnatus; semen solitarium.

Frutex ericoides. Folia sessilia, sparsa, plusminusve densa, parva, integerrima, marginibus hyalinis. Stipulae nullae. Flores sessiles, in capitula terminalia conferti singuli in axillam bractee vel folii floralis. Bractee 2, subfoliaceae vel ad margines scariosae, persistentes, basi connatae, rigidulae, parte libera imbricatae tubumque calycis includentes.

Species 1. Australiae occidentalis incola.

The affinity is with *Calythrix* and *Lhotskya* with similar ovules and placentation, while the plant has much the aspect of *Calythrix aurea* Lindl. It differs from *Calythrix* and *Lhotskya* however, in the complete absence of any sepals or calyx-lobes, in the number of petals, and in the strongly 4-ribbed calyx-tube which is quite sessile and constricted at the apex. The calyx tube is almost that of *Actinodium*, while the bracteoles are those of some species of *Calythrix*.

C. aurea C. A. Gardn. sp. nov.

Fruticulus metralis altus, glaber; ramis erectis, ramulis inferne crebro cicatriciferis, superne dense foliosis; foliis erectis, oblongo-lanceolatis, breviter petiolatis, apice acutis vel mucronatis, supra concavis, subtus carinatis, uninervis, glandulis perpaucis inspersis, marginibus ciliolatis; floribus sessilibus in capitulis ad apicem ramulorum, foliis floralibus vel bracteis foliis subsimilibus sed brevioribus; bracteolis ad medium usque connatis, calycem excedentibus, obtusissimis vel breviter mucronatis, marginibus hyalinis; calycis tubo obovato, fortissime 4-gono, superne constricto, glabro; petalis flavis, oblongo-ovatis, imbricatis, quam calycis tubus multo longioribus; staminibus numerosis, (? fuscis); stylo quam petala stamenes breviora, apice minutissime capitato, glabro.

Folia 5-7 mm. longa; calycis tubus 2.5-3 mm. longus; petala 7-8 mm. longa; fructus imperfectus quam bracteoli breviori.

Hab. in distr. Irwin, ad ripas fluvii Arrowsmith, flor. m. Septem. W. E. Blackall 4449 (Typus in Herb. Perth).

Although ripe fruits have not been observed, the ovary after flowering becomes cylindrically elongated with a short constricted portion below the summit, but retains the four strong ribs of the flowering calyx-tube. I have described the ovules as being 2 in number, and they are the same as those which I have seen in specimens of *Calythrix* and *Lhotskya* as far as I have examined specimens of those genera. These ovules, which are erect near the middle of a filiform placenta, appear to be almost or quite separate when viewed from one side, but from the opposite side they appear to be fused to about the middle. It is possible that they represent a single lobed ovule.

Darwinia Meeboldii C. A. Gardn. sp. nov.

Frutex rigidus, erectus; 2-3 metralis altus, glaber; cortice albo-suberosa; foliis densis, decussatis, erectis vel subpatentibus, lineari-oblongis, sessilibus, basi breviter contractis, apice obtusis, non evidenter nervosis, planis vel marginibus leviter recurvis; capitulis terminalibus, magnis, nutantibus; bracteis involucrantibus pluri-seriatis, ovatis vel oblongo-lanceolatis vel lanceolatis, acutis vel acuminatis, exterioribus brevioribus, viridibus,

interioribus praesertim sursum purpureis, omnibus integris; bracteolis linearibus, tenuibus, integris, acutis, valde concavis vel cymbiformibus, quam calyx vix longioribus; calycis tubo cylindrico, duro, crustaceo, laevo et nitente, minute foveolato, sursum papilloso, lobis erectis, duris, crassis, apicem acutis, sursum atro-violaceis; petalis quam calycis lobi vix longioribus, triangulari-lanceolatis, acutis, integris; staminibus brevibus; staminodiis subulatis, quam filamenta brevioribus; stylo elongato, per anthesin ruguloso-contracto, sub apice barbato, demum elongato.

Frutex 3 m. attingens; folia usque 9 mm. longa, 1.5-2 mm. lata; capitula 3 cm. longa; bracteae interiores 3 cm. longae; flos 11 mm. longus.

Hab. in distr. Stirling prope Cranbrook. *A. Meebold*; a pede Peak Donnelly in elivis lapidosis, fl. m. Novem., *W. Porteous* et *C. A. Gardner*.

Affinity to *D. leiostyla* (Turcz.) Domin, differing in the larger size and more robust habit, the broader and longer leaves, the much larger and narrower acuminate bracts of the involuere and the larger flowers. The two species look entirely different in the field.

Verticordia Etheliana C. A. Gardn. sp. nov.

Section *Catocalyptra*.

Fruticulus semimetralis altus, ramis patentibus; foliis breviter petiolatis, erecto-patentibus, orbiculari-obovatis, obtusis, subglaucis, imbricatis, concavis; floribus axillaribus, paucis, magnis, purpurascensibus, bracteolis amplis, hyalinis, subpersistentibus; calycis tubo turbinato, 5-costato, segmentis primariis in lobos penniformes 11-incisis, lobis accessoriis hyalinis, reflexis sed non a basi erectis, orbicularibus, ciliatis, appendicibus herbaceis intertubi costas conspicuis, acutis, subliberis, linearitriangularis; petalis tubo stamineo adnatis, oblongo-cordatis, ad apicem versus longe ciliatis; staminibus cum staminodiis basi in tubum stamineum coalitis, antheris parvis, oblongis; staminodiis subulatis, stylo sub apice barbato.

Folia 4-5 mm. longa; pedicelli usque 8 mm. longi; tubus calycinus 5 mm. longus; segmenta primaria 7 mm. longa, accessoria 5 mm. longa; petala 7 mm. longa; staminodia staminaque 3 mm. longa.

Hab. in distr. Irwin, inter Yaringa et Northampton, fl. m. Septem. *W. E. Blackall* 4724.

Novam hanc nominando pulcherimanque speciem Ethel commemoro, quae, et operum et explorationum socia devotissima, una cum doctore clarissimo Gulielmo Edwardo Blackall, viro suo, specimenibus tum colligendis tum ordinandis emixe laboravit.

Affinity to *V. chrysostachya* Meissn., from which it differs in the much larger crimson or scarlet flowers, the longer pedicels and larger herbaceous appendages, as well as in the much shorter inflorescence. Neither in this, nor in any other species of the Sect. *Catocalyptra* investigated are the accessory calyx-segments reflexed upwards on the calyx-tube.

VERBENACEÆ.

Pityrodia maculata C. A. Gardn. sp. nov.

Section *Eupityrodia*.

Suffrutex 50 cm. altus; ramis erectis, strictis, teretibus, paucè glanduloso-pilosis; foliis distantibus, sessilibus, basi auriculato-dilatatis, ellipticis, tenuibus, dentibus utroque circiter 10, acutis, venis pinnatis, grosse anastomosis, paucè glanduloso-pilosis vel subglabris; floribus in axillis

foliorum superiorum, in racemis 2-3-floribus dispositis, bracteolis herbaceis, ovatis, setaceo-denticulatis, persistentibus, fere glabris; pedicellis gracilibus, apicem versus stellato-tomentosis; calycis segmentis subliberis, oblongo-lanceolatis, acutis, extus laxe stellato-hirsutis, intus glabris; corolla lilacina, e basi sensim ampliata, limbi lobis 2 superioribus altius connatis, 3 inferioribus ovato-orbicularibus; staminibus inclusis, basin versus tubo insertis, antheris omnibus breviter appendiculatis; ovario apice tomentoso, stylo glabro, bifido.

Folia 2 cm. longa et 8 mm. lata; racemi 2.5 cm. longi; calyx 6 mm. longus; corolla 1.3 cm. longa.

Hab. in distr. Avon, prope Ballidu, in arenosis apertis, flor. m. Septem. *Gardner* 2708.

Affinity to *P. dilatata* (F. Muell.) Benth., differing in the ovate dentate thin subglabrous leaves which are not bullate, the abbreviated axillary racemes, ovate bracteoles, oblong-lanceolate calyx-segments, and in the indumentum. The corolla is conspicuously brown spotted in the throat. The flowers have been damaged by insects due to early neglect, and thus the shape of the corolla lobes has been described from undeveloped flowers.

***Dicrastyles flexuosa* (Price) C. A. Gardn. comb. nov.**

A specimen collected by W. E. Blackall between Menzies and Broad Arrow is identical with Ince's plant described by Price as *Pityrodia flexuosa* in Herb. Kew., of which I have seen the original. The corolla is nearly regular, and there are five perfect stamens and a two-branched style. It must therefore be transferred to the genus *Dicrastyles*.

SOLANACEAE.

***Anthotroche myoporoides* C. A. Gardn. sp. nov.**

Frutex erectus, 2-3 m. altus, ramis patentibus, tomento cano omnino vestitis, foliis alternis, longe obovatis, basi attenuatis in petiolum distinctum, planis, obtusis, densissime cano-tomentosis; floribus in axillis singulis vel pauca aggregatis, subsessilibus vel breviter pedicellatis; bracteis parvis, oblongis vel ellipticis, cano-tomentosis, crassis, deciduis; calyce 5-lobato, extus albo-tomentoso, lobis tubo aequilongis, ovato-deltaoideis, subaentis corollae tubo calycem vix excedente, extus albo tomentoso, intus glabri, baso excepto, sub insertione filamentorum barbato, prominenter atro-violaceo striato, lobis intus albo-tomentosis; staminibus 5, omnibus fertilibus, in tubum corollae insertis, filamentis brevibus, ad basin barbatis; disco glabro, crasso; ovario ovoideo, glabro, loculis 2, 4-5-ovulatis; stylo elongato, glabro.

Frutex usque 3 m. altus; folia usque 3.5 cm. longa, usque 1.8 cm. lata; calyx 6 mm. longus; lobi 3 mm. longi; corolla 8 mm. longa et lata.

Hab. in distr. Irwin prope Indarra, in arenosis apertis, fl. m. Sept. *Gardner* 2650 (Typus); atque septentrionalem versus flumen Murchison River transgreditur, ubi in arenosis apertis adest flor. m. October.

Affinity to *A. Blackii*, differing in the close hoary tomentum of the branchlets and leaves, the shape and size of the leaves, the smaller whitish (not deep violet) flowers with acute corolla lobes &c. It has the indumentum of *A. Walcottii*, from which it differs in stature, the sessile flowers, and from both species in the distinctly tubular corolla, the shape of which is that of *Myoporum*.

PEDALIACEÆ.

Josephinia Eugeniae F. Muell.

This species is recorded from Tambrey Station in the vicinity of the Hamersley Range, where it is reported as spreading and becoming a troublesome weed.

ACANTHACEÆ.

Dicladantha Forrestii F. Muell.

An undershrub almost a metre high, with pale pink or white flowers. It grows in stony watercourses along the Upper Hardie River near Mount Samson; fl. m. August. *Gardner* 3168.

Ruellia primulacea F. Muell.

A very attractive species which is either a small shrub, or semi-scandent and attaining a height of several feet; the flowers are a rich violet in colour. Barrabiddy Creek, Minilya River, *Gardner* 3020; 90 kilometres north of Carnarvon, *G. R. Meadly*.

This is the first record of this species from Western Australia.

MYOPORACEÆ.

Eremophila lachnocalyx C. A. Gardn. sp. nov.Section *Eriocalyx*.

Frutex erectus 2 m. altus, ramis ramulisque dense albo-tomentosis, demum glabris, reliquis foliorum evanidorum indutis, sursum dense foliatis; foliis parvis, imbricatis, patentibus vel reflexis, orbiculari-obovatis vel ellipticis, basin versus contractis, late sessilibus, obtusis, utrinque cano-tomentosis; floribus conspicuis, axillaribus; pedunculis solitariis, tenuibus, quam folia paulo longioribus, dense floccoso-tomentosis; calycis segmentis aequalibus, linearibus, acutis vel acuminatis, intus glabris, extus dense floccoso-tomentosis; corolla basi vix constricta, campanulata, calycem duplo superante, intense violacea, lobis subaequalibus, ovatis, subacutis, 2 superioribus alte connatis, mediano quam ceteri paulum longiore; staminibus inclusis; ovario lanoso, stylo plusminusve glabro.

Folia 4.5 mm. longa, 3-3.5 mm. lata; pedunculi 7-8 mm. longi; sepala 1 em. longa, 1 mm. lata; corolla vix 2 em. longa.

Hab. in distr. Austin prope Paynesville, in lapidosis lutosis, fl. m. August, *Gardner* 2515; pr. Cue, in rupestribus lutosis, *Gardner* July, 1931; Nannine, lutoso-nitosis, *Gardner, C. Andrews*; Mount Gascoigne, *E. S. Simpson* Septem. 1927.

Affinity to *E. Mackinlayi* F. Muell., and *E. strongylophylla* F. Muell., differing in the smaller leaves, the corolla not constricted above the ovary but gradually widened into a campanulate base, the longer acute corolla lobes, much narrower and more deeply divided calyx covered with a long floccose wool. This white wool is sometimes suffused with violet, and always forms a subglobular woolly mass which quite conceals the calyx. The specimen from Mount Gascoigne has more acute and erect leaves, but is otherwise typical: it may perhaps constitute a distinct variety.

Eremophila inflata C. A. Gardn. sp. nov.Section *Eremocosmos*.

Frutex gracilis, erectis, glaber (floribus exceptis), ramis ramulisque virgatis, ramulis paucè resinoso-tuberculatis; foliis lineari-oblongatis, obtusis, nonnunquam breviter uncinatis, basin versus attenuatis vel breviter petiolatis, siccando nigrescentibus, costa centrale solum conspicua; floribus axillaribus, solitariis, graciliter pedunculatis; pedunculis glabris, patentibus vel recurvis, sub calyce clavatum incrassatis; calycis segmentis oblongo-ellipticis, solutis, obtusis, tenuibus, valde reticulato-nervosis, marginibus et nervis ciliolatis, post anthesin deflexis; corolla pallide violacea, glabra, tubo campanulato, basi inflato, sursum contracto, plusminusve unicolato, extus parè piloso, intus glabro, lobis brevioribus, obtusis, subaequalibus; staminibus inclusis; ovario longe hirsuto, stylo glabro, uncinato.

Frutex 2 m. altus; folia usque 3 cm. longa, 3.5 mm. lata; sepala 3.5 mm. longa, 1.6 mm. lata; corolla 7.5 mm. longa.

Hab. in distr. Coolgardie prope Mount Holland, juxta Lake Cronin, leg. H. Steedman, Decem. 1929.

A very distinct species with affinity to *E. Sturtii* R. Br., but with several differences. The reflexed calyx-segments and the much dilated base of the corolla, as well as the very short and obtuse corolla-lobes are features peculiar to the species within the §*Eremocosmos*.

Eremophila Macmillaniana C. A. Gardn. sp. nov.Section *Platychilus*

Frutex robustus, 2 metralis altus, rigidus, erectus; ramulis erecto-patentibus, reliquis foliorum delapsorum persistentibus indutis, cano-tomentosis, sursum foliatis; foliis congestis, patentibus, lato-spathulatis vel spathulato-obovatis, basin versus attenuatis, breviter petiolatis, junioribus albo-tomentosis demum glabris et argenteo-nitentibus, apice abrupte acutis et recurvis nonnunquam complicatis; floribus axillaribus vel terminalibus, solitariis; pedunculis erectis vel leviter patentibus, sursum complanato-clavatis, albo-tomentosis, angularibus; calycis segmentis magnis, oblongo-obovatis, inaequalibus, fere liberis, acutis vel mucronatis, extus sparse tomentosus, demum glabris, prominenter reticulato-nervosis, post anthesin leviter amplificatis, ad basin vix imbricatis; corolla atro-purpurea, extus fere glabra, tubo supra ovarium constricto, deinde sensim ampliato, plusminusve recto, intus prope basin dense lanoso, lobis subaequalibus, 2 superioribus angusto-ovatis, acutis, alte connatis, lobis inferioribus ovatis, obtusis vel mucronatis; staminibus breviter exsertis; ovario longe cylindrico, minute aureo-granuloso, stylo elongato, glabro.

Frutex 2 metralis altus; folia 3 cm. longa, 1 cm. lata; calycis segmentis usque 2.6 cm. longi, 8 mm. lati; corolla usque 3.3 cm. longa, lobis 8 mm. longis.

Hab. in distr. Austin, ab lato orientale montium Barlowerie, in clivis lapidosis sterilibus, fl. m. Jul-Aug. Gardner 2533; atque ad vicum Cue, in collibus lapidosis.

Quam speciem honoris causa pro illustrissimo Roberto Furze Macmillan Equite, nomino; qui vero, multos per annos Judicatus in Australia occidentali primatum tenens, haud minore ingenio quam urbanitate artium simul ac scientiarum hac in republica fautor excellebat.

Affinity to *E. Fraseri* F. Muell., and *E. spathulata* W. V. Fitzg., differing from both in the shape of the calyx-segments and in the corolla. The calyx is almost that of the species of § *Eremocosmos*. There is also some resemblance to *E. Freelingii* F. Muell., but the leaves are broader, the calyx-segments larger and of different shape, and the stamens exerted.

***Eremophila spectabilis* C. A. Gardn. sp. nov.**

(§ *Platytilus*)

Frutex 1-2 metralis altus; ramis patentibus, inferioribus pendulis, ramulis foliaceis, resinosis et breviter pilosis: foliis linearibus vel linearilanceolatis, remote denticulatis, acuminatis, basin versus attenuatis vix petiolatis, viridibus et glaucis, breviter pilosis, supra subtiliter canaliculatis; pedunculis axillaribus, solitariis, elongatis, sigmoideo-patentibus, apicem versus angulatis et valde incrassatis; calycis segmentis valde imbricatis, inaequalibus, segmento exterioro unilateraliter decurrente, ovato-acuminatis, ceteris angusto-lanceolatis, omnibus minute hispidulis et viscidis; corolla intense violacea, subglabra, tubo cylindrico, supra ovarium leviter constricto, deinde ampliato, lobis ovatis vel obovatis, acutis, 2 superioribus alte connatis, mediano emeato-obovato, fauce intus lanosa; staminibus inclusis; ovario ovoideo, dense hirsuto, ovulis in loculis 5, stylo tenui apice uncinato, piloso.

Frutex 2 m. altus; folia usque 6 cm. longa, 3 mm. lata; pedunculi 2 cm. longi; sepala usque 2.4 cm. longa et usque 9 mm. lata post anthesin vix amplificata; corolla 3.5 cm. longa, limbi lobi 1.5 cm. longi.

Hab. in distr. Austin a Meekatharra 60 km. septentrionem versus, in fruticetis apertis, in luto lapidosis, flor. m. July. *Gardner* 2328 (Typus).

This very attractive plant is closely related to *E. Freelingii*, from which it differs in the sessile denticulate leaves, much longer sigmoid peduncles and acute corolla lobes, as well as in the calyx. It also has some points of resemblance with *E. Gilesii*, differing in the distinctly and somewhat coarsely denticulate leaves, shorter and thicker peduncle, imbricate calyx-segments, acute corolla lobes etc.

E. Freelingii, *E. spectabilis*, *E. Gilesii* and *E. foliosissima* have all the same characteristic indumentum of short stiff curled white hairs accompanied by some viscidness, but the marked decurrence of the right hand margin of the outer sepals of *E. spectabilis* is a feature not observed in the other species.

***Eremophila miniata* C. A. Gardn. sp. nov.**

(§ *Platytilus*.)

Arbor parva vel frutex elatus, cortex nigro-suberosa; ramis rigidis, rectangulariter divaricatis, crassis; foliis apice ramulorum versus congestis, lato-linearibus vel linear-oblongis, sessilibus, subplanis, pubescentibus, apice acutis vel acuminatis, costa centrale solum conspicue; pedunculis solitariis, sigmoideo-patentibus, pubescentibus; calycis segmentis valde imbricatis, liberis, inaequalibus, lato-ovatis vel subrotundis usque ellipticis, mucronatis, roseis, reticulatis, post anthesin amplificatis et prominenter venosis, puberulis vel glabris; corolla miniata, sparse et breviter pilosa, intus glabra, fauce brunneo maculata; tubo basi cylindrico, supra ovarium sensim ampliato, lobis 2 superioribus obovatis, acutis, alte connatis, inferioribus ovatis, acutis; staminibus exertis; ovario styloque glabro.

Planta usque 5 m. alta; folia 2-2.5 cm. longa, 2-4 mm. lata; pedunculi 1.5 cm. longi; sepala 1.5 cm. longa et 1.3 cm. lata, usque 2 cm. longa et 8 mm. lata; corolla 3.3 cm. longa; limbi lobi 1.2 cm. longi.

Hab. in distr. Avon, in fruticetis apertis lutoso-nitrosis prope Cow-cowing, flor. m. Septem. *Gardner* 2740 (Typus); in distr. Coolgardie, ad Penny's Find prope Kurnalpi, *J. H. Frank*, fruct. m. Decem., prope Broad Arrow, *W. E. Blackall* 2144, flor. m. Septem.

Apart from the shape of the corolla and its lobes, this species might, from the description, be mistaken for *E. Duttoni* F. Muell. It belongs, however, to the Section *Platychilus*, and should be placed next to *E. viscida* Endl., from which it differs in several features, such as the shape and size of the leaves which are not viscid, the size and lobing of the corolla, etc.

E. viscida Endl., previously known only from the single specimen in the Vienna Herbarium, has been collected by the author from Ballidu in granitic soil, and by F. E. Victor from Kununoppin. It is a handsome shrub of 3 to 4 metres in height, with white flowers, the throat spotted with violet. The calyx segments enlarge after flowering, but become membranous, and are elliptical to almost obovate in shape.

***Eremophila virens* C. A. Gardn. sp. nov.**

Section *Stenochilus*.

Frutex erectus, virgatus, 3-5 metralis altus; ramulis erectis, viscidis; foliis alternis, patentibus, petiolatis, planis vel complicatis, oblongo-lanceolatis, lanceolatis vel ovato-lanceolatis, longe petiolatis, viscidis, virescen-tibus, glabris, basi inaequaliter abrupte contractis, apice acutis vel acuminatis; floribus viridibus; pedunculis solitariis vel binis, axillaribus, elongatis, tenuibus, sigmoideo-incurvatis, quam calyx multo longioribus; calycis segmentis liberis, imbricatis, exterioribus ovatis, interioribus oblongo-obovatis vel oblanceolatis, intus lanosis, omnibus post anthesin amplificatis; corolla viridi, extus albo-tomentosa, sed perfecta non visu, tubo supra ovarium con-tracto sursum leviter ampliato, sub limbo attenuato, limbi lobis acutis; staminibus exsertis; ovario subgloboso, glabro, stylo glabro.

Frutex 3-5 m. altus; folia 7.2 cm. longa vel minus, usque 2.6 cm. lata, petiolus 1.5 cm. longus; pedunculi usque 2 cm. longi, graciles; calyx 6 mm. longus, post anthesin 1.3 cm. longus; corolla 1.3 cm. longa.

Hab. in distr. Coolgardie prope Champion, in fruticetis graniticis, deflor. m. Septem. *Gardner* 2765.

Affinity to *E. serrulata* (A. Cum.) Druce, but with much larger and quite entire differently shaped leaves, the corolla woolly-tomentose outside. The habit of the two is also quite different.

When collected, the specimens were past flowering, and but few somewhat damaged flowers were obtained, while one or two were immature. The structure of the corolla is however, entirely that of § *Stenochilus*, with four small deltoid teeth forming the upper lip, and a much more deeply separated lower lip formed from a single ovate-oblong lobe.

LABIATÆ.

***Hemigenia divaricata* C. A. Gardn. sp. nov.**

Section *Diplanthera*.

Frutex divaricato-ramosus, ramulis oppositis, rectangulariter divaricatis, teretibus; foliis oppositis, in ramulis junioribus saepissime fasciculato-oppositis, linearibus vel lineari-spathulatis, sessilibus, concavis, vix acutis, glabris, apice saepissime recurvatis; floribus axillaribus, solitariis, brevi-pedunculatis vel sessilibus, supra medium bibracteolatis; bracteolis parvis,

lineari-lanceolatis, acutis, ciliatis, quam calyx multo brevioribus, deciduis; calycis tubo campanulato, laxe hirsuto, lobis subaequalibus, ovato-lanceolatis, acuminatis, conspicue costatis, tubo subaequantibus; corolla violacea, extus laxe hirsuta, intus glabra, tubo e basi cylindrico sub limbo ampliato, limbi lobis emarginatis vel bilobis, labii superioris lobis 2 ovatis, labii inferioris lobis 3, quam superius longioribus; antherarum superiorum loculo altero sterili in appendiculam glabram producto, antherarum inferiorum altero globoso sterilecente.

Frutex 1-1.5 m. altus; folia 4-6 mm. longa; pedunculi circ. 1 mm. longi; bracteolae 2.5 mm. longae; calycis tubus 4 mm. longus, lobi usque 6 mm. longi.

Hab. in distr. Austin prope Pindar occidentalem versus in locis graniticis apertis, flor. m. Septem. *Gardner* 2624.

This species is most closely related to *H. diplanthera* F. Muell., differing principally in the broader hirsute ecostate calyx-tube and the hairy corolla.

Hemigenia coccinea C. A. Gardn. sp. nov.

Section *Euhemigenia*.

Frutex divaricatus, usque 20 cm. altus, pilis appressis vestitus; ramulis intricato-divaricatis, teretibus; foliis oppositis, erectis vel leviter patentibus, lineari-oblongis, valde concavis, sessilibus, obtusis, apice leviter recurvatis, supra glabris, subtus appresso-pilosis; floribus axillaribus, longe pedunculatis; pedunculis medio bibracteolatis; bracteolis lineari-setaceis, deciduis, calycis tubo cylindrico-campanulato, parce piloso, 10-costato, lobis triangulari-lanceolatis, acuminatis, subaequalibus, quam tubus longioribus; corolla coccinea, extus fere glabra, intus glabra, basin excepta, tubo e basi angustocylindrico, sensim ampliato; labii superioris lobis 2 ovato, oblongis, truncatis, supra medium connatis, labii inferioris lobis 3, quam superius longioribus, lobo mediano emarginato, lateralibus oblongis brevioribus, omnibus serratodentatis; antherarum loculo altero sterili, in appendiculam glabram producto.

Frutex 20 cm. altus; folia 7-8 mm. longa; pedunculi 6-7 mm. longi; tubus calycis 2.5 mm. longus, lobi 3 mm. longi; corolla 1.8 cm. longa.

Hab. in distr. Irwin ad fines orientalem versus, prope Canua, in lutosiis graniticis, flor. m. Septem. *Gardner* 2661.

Amongst the species of the Sect. *Euhemigenia* this species has its closest affinity to *H. humilis* Benth., differing in the narrower deeply concave leaves, the longer peduncles and narrower bracteoles, the much longer corolla, and in having all the anther appendages glabrous. It is a low intricately divaricate shrub with the aspect of *H. divaricata* C. A. Gardn. but has scarlet flowers with a much longer corolla-tube. The differences between the Sections *Diplanthera* and *Euhemigenia* are not entirely satisfactory.

Prostanthera magnifica C. A. Gardn. sp. nov.

Frutex 1-2 metralis altus, fere glaber, ramis ramulisque divaricato-patentibus, glabris vel breviter crispo-hirsutis; foliis ellipticis vel obovatis, crassis, integris vel paucis denticulatis, basin versus attenuatis, in petiolo brevi; floribus magnis, in axillis supremis spicis foliatis formantibus; pedunculis erectis, sub calyce bibracteolatis; bracteolis lineari-lanceolatis, demum deciduis; calyce roseo, tubo glabro, brevi, striato, labio superno integro, magno, rotundo-ovato, quam corolla vix brevior, eleganter nervoso, obtuso, labio infero ovato vel oblongo-ovato, quam superius duplo brevior; corolla purpurea vel coccinea, extus breviter albo-pilosa, intus farinoso-

pubescente, subaequaliter 5-lobata, lobis dense ciliatis; labio supero late rotundato, emarginato, vel lobis 2 brevibus auctis; labii inferi lobis lateralibus ovatis, subauctis basi subcordatis, lobo mediano emarginato-bilobo; antherarum calcare longitudinem loculi duplo excedente; stylo glabro.

Frutex 1-2 m. altus; folia usque 2.5 cm. longa, 1 cm. lata; pedunculi 4-5 mm. longi; bracteoli 4-5 mm. longi; calyx usque 2.4 cm. longus, labium superum 1.7 cm. latum, inferum 1 cm. longum, 6 mm. latum; corolla 2 cm. longa, limbi lobi circiter 3.4 mm. longi.

Hab. in distr. Irwin, ad vicum Mullewa 30 km. occidentalem versus, flor. m. Septem. *W. E. Blackall* 2783; (Typus); atque 45 km. ab orientalem versus Ajana, *Mrs. D. L. Carson*, Oct. 1940.

var. **asperata** *C. A. Gardn.* var. nov.

Foliis minoribus, asperatis, minute asperato-denticulatis; floribus coccineis, minoribus.

Ad summum montem Chnrchman in rupestribus graniticis, flor. m. Septem. *W. E. Blackall* 3458.

This species is very distinct. It belongs to the Section *Eupostanthera*, but has no clear affinities. The rich purple or scarlet colour of the calyx, and the scarlet or purple corolla, the size of the flowers, small stature and floriferous habit render it a most attractive species for horticultural development.

GOODENIACEÆ.

Goodenia Hilliana *C. A. Gardn.* sp. nov.

(*Eugoodenia-Bracteolatae-Racemosae.*)

Herba perennis vel suffrutex, erecta vel ramosa, 45 cm. alta; ramis teretibus, crassis, dense et breviter glanduloso-pubescentibus; foliis herbaceis, erectis, planis, oblongo-obovatis, glanduloso-pilosis, basin versus attenuatis, vix petiolatis, apice obtusis, margine dentatis; racemis densifloris, erectis, terminalibus, foliis multo excedentibus; pedicellis basi bracteatis, sub calyce bracteolatis; bracteis foliaceis, erectis, oblongo-obovatis, integris, glanduloso-pubescentibus, quam pedicelli longioribus, apice obtusis, basin versus attenuatis; bracteolis similibus bracteis sed minoribus angustioribusque, glanduloso-pubescentibus; corolla caeruleo-violacea, extus sparse hirsuta, intus glabra, lobis 3 inferioribus supra medium connatis, 2 superioribus profunde divisis, apice acutis, omnibus alatis, alis loborum aequalatis; staminibus liberis, antheris quam filamenta duplo brevioribus, oblongo-linearibus; stylo sparse piloso, quam stamina subduplo longiore, indusio compresso-eupulato, margine breviter et dense ciliato; ovario 2-loculari, dissepimento incompleto, ovulis 3-5; capsula oblonga, quadrivalvata, seminibus anguste marginatis.

Planta 45 cm. alta vel minus; folia usque 3.5 cm. longa, 6-7 mm. lata; racemi usque 10 cm. longi; pedicelli 3 mm. longi; calyx 7 mm. longus, tubo 2 mm. longo; segmentis 5 mm. longis; corolla 1.4 cm. longa, lobi cum alis 4 mm. lati.

Hab. in distr. Irwin, in collibus glareosis ad fluvium "Hill River," flor. et fruct. m. Feby. 1941. *Gardner*.

Hanc species viro celeberrimo praeclarissimoque Arthur W. Hill, equiti, Horti Botanici Regii Kewensis Directori nominavi, qui peregravit Australiam occidentalem in anno 1927, quique specimina tanta contulit hujus regionis.

A very distinct and handsome species nearest to *G. quadrilocularis* R. Br., but differing in the whole plant being densely glandular-pubescent throughout, in the long leafy calyx-lobes and the equally winged segments of the zygomorphic corolla. The lateness of its flowering season, together with its floriferous nature make it a species worthy of horticultural development.

STYLIDIACEÆ.

Stylidium galioides C. A. Gardn. sp. nov.

(Tolypangium — Verticillatæ)

Perennis, omnino glabra, caulis teretibus, flexuosis, diffusis, probabiliter scandentibus, parce ramosis; foliis in verticillis saepissime circiter 8-9, inter sese distantibus congestis, oblanceolatis, apicem versus abrupte contractis et acutis, basin versus sensim attenuatis, planis vel marginibus leviter recurvatis, exterioribus squamis redactis; racemis terminalibus, laxis, paucifloris, longe pedicellatis; bracteis lineari-lanceolatis, acutis, basi ultra insertionem in processum brevem productis; pedicellis calycem semper superantibus, duobus bracteolis bracteis similibus sed minoribus instructis; calycis tubo ovoideo, lobis oblongis, tubo aequilongis, obtusis vel vix acutis, minute ciliatis, fere aequalibus; corolla lutea, tubo brevi, segmentis late oblongis, integris, basin versus marginibus glanduloso-ciliatis, subaequalibus; faucis appendiculis 8, anterioribus 2 late ovatis, integris, valde conspicuis, posterioribus 6 multo minoribus, subulatis; labello ovato, serrato-denticulato, appendiculis basalibus erectis, oblongo-ovatis, tenuibus, integris.

Planta 30-50 cm. alta; folia usque 4 cm. longa, 4.5 mm. lata; racemi 7 cm. longi; pedicelli usque 1.3 cm. longi; calycis tubus 5 mm. longus, segmenta 4-5 mm. longa, 1.5 mm. lata; corollae tubus vix 3 mm. longus, lobi circiter 7-8 mm. longi, 4 mm. lati.

Hab. in distr. Eyre, a summam montium East Mount Barren, inter rupestres, flor. m. Novem. Gardner 2955.

Affinity to *S. verticillatum* F. Muell., but with larger differently shaped leaves, the inflorescence reduced to a raceme with glabrous pedicles and calyx, and with more throat-appendages. the colour of the flowers is also different.

Stylidium laciniatum C. A. Gardn. sp. nov.

(Tolypangium — Junceæ)

Perennis, innovationes perpaucas, adscendentes aut simplices; foliis omnibus radicalibus, dense rosulatum confertis, parvis, obovatis vel late spatulatis, acutis, subtus plusminusve carinatis, marginibus scariosis, sub anthesin evanescentibus; scapis volubilibus, glabris, 3 metralis altis, plusminusve robustis vel flexuosis, efoliatis, raro partibus superioribus bracteis perpaucis lanceolato-linearibus acutis basi calcaratis instructis; floribus in racemis terminalibus dispositis, pedicellis calycem aequilongis; bracteis simul marginibus hyalinis vel subscariosis lanceolatis, basi ultra insertionem in processum angustum curvato-patentem productis; bracteolis bracteis similibus sed minoribus: tubo calycis parce glanduloso-pubescente, oblongo, lobis tubi quam ovarium vix longioribus, valde inaequalibus, posterioribus anguste lineari-subulatis, 2 anterioribus longioribus, anguste lineari-lanceolatis, omnibus valde acuminatis et margine scarioso-limbatis; corolla rosacea, tubo lobis calycis posterioribus subaequilongis, lobis extus parce glanduloso-pubescentibus, ovatis vel obovatis, omnibus profunde incisus vel laciniatis, posticis quam laterales longioribus, a sinu lato separatis, dentibus linearibus

vel lineari-lanceolatis; faucis appendiculis duobus minutis, subulatis, e basi posticum segmentorum ortis; labello ovato, obtuso, mucronato, exappendiculato; ovario oblongo, ovulis numerosis e placenta basalia libera.

Folia 5-6 cm. longa; scapus usque 3 m. altus; braeetae 1 cm. longae; bracteolae 5 mm. longae; pedicelli 5 mm. longi; calycis tubus 6 mm. longus; segmentis posticis 4 mm., anticis 7 mm. longis; corolla 1.2 cm. longa, lobis \pm 8 mm. longis.

Hab. in distr. Warren prope fluvium Frankland, in lutosis paludis humosis, flor. m. Jan.-Febr. *Edward Gardner* Jan. 1936 (Typus); atque prope Denmark, juxta "Hell's Hole," in locis similibus, *C. E. Lane-Poole* n. 324, Febr. 1923.

A very distinct species allied to *S. junceum* R. Br., but with a different habit, loose racemose inflorescence and deeply dentate corolla lobes, as well as in the shape of the capsule.

PLATE I.

Strangea cynanchicarpa (Meissn.), F. Muell.

A—Habit, showing flowers and fruits. B—Bracteoles. C—Perianth. D—Perianth in section. E—Torus and pistil. F—Section of follicle, showing position of ovule, with the inner layer of the endocarp partially removed, and the outer membranous layer placed to one side. G—Section of follicle, showing relative position of inner layers of fruit. H—Upper part of endocarp, showing attachment of inner and outer layers, with funicle and base of ovule.

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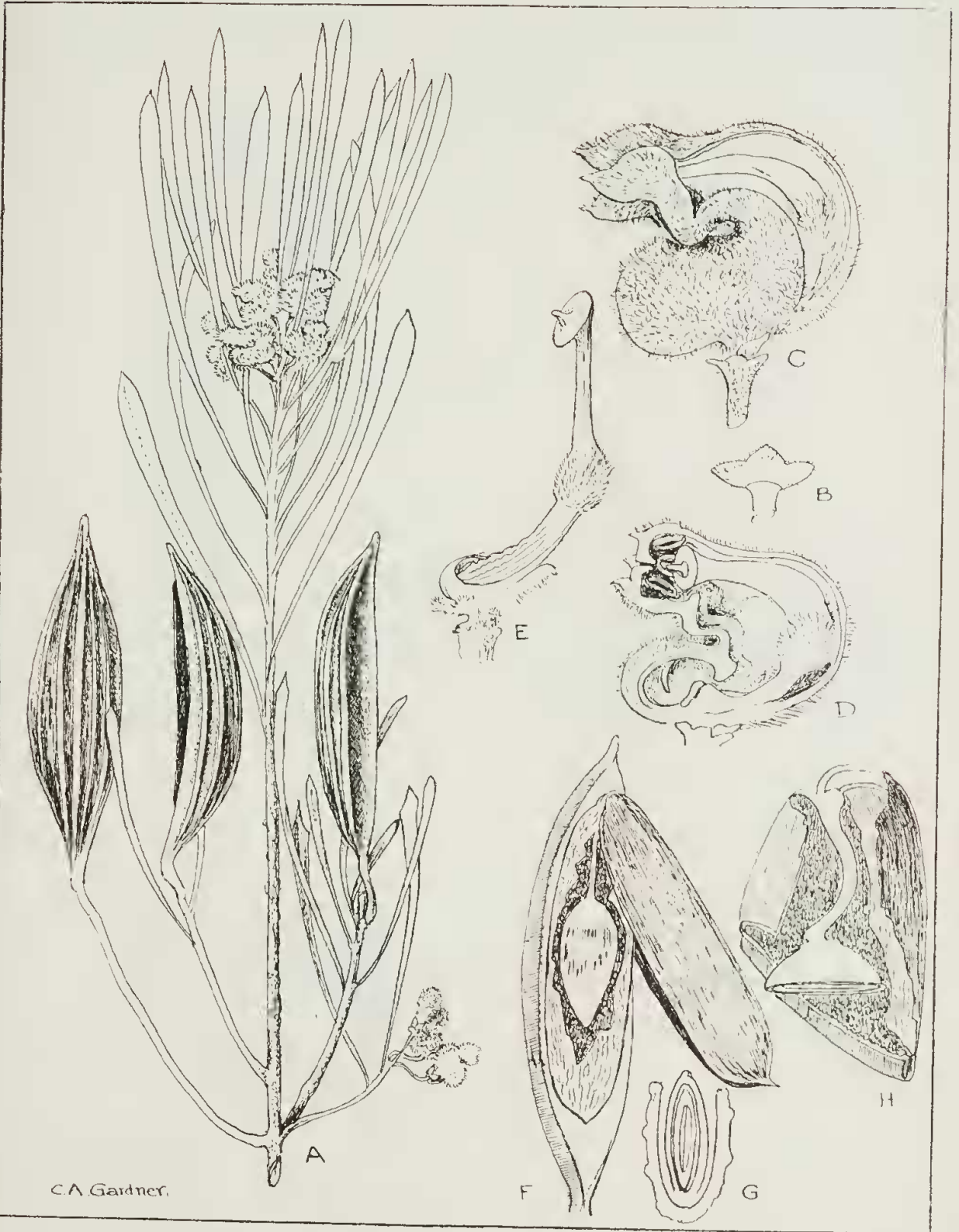


PLATE II.

Strangea stenocarpoides (F. Muell, ex Benth.), C. A. Gardn.

A—Habit, showing flowers and fruits. B—Inflorescence. C, D, E, and F—Perianth segments. G—Flower-buds. H—Pistil. I—Endocarp. K—Section through the endocarp, showing ovule in position.

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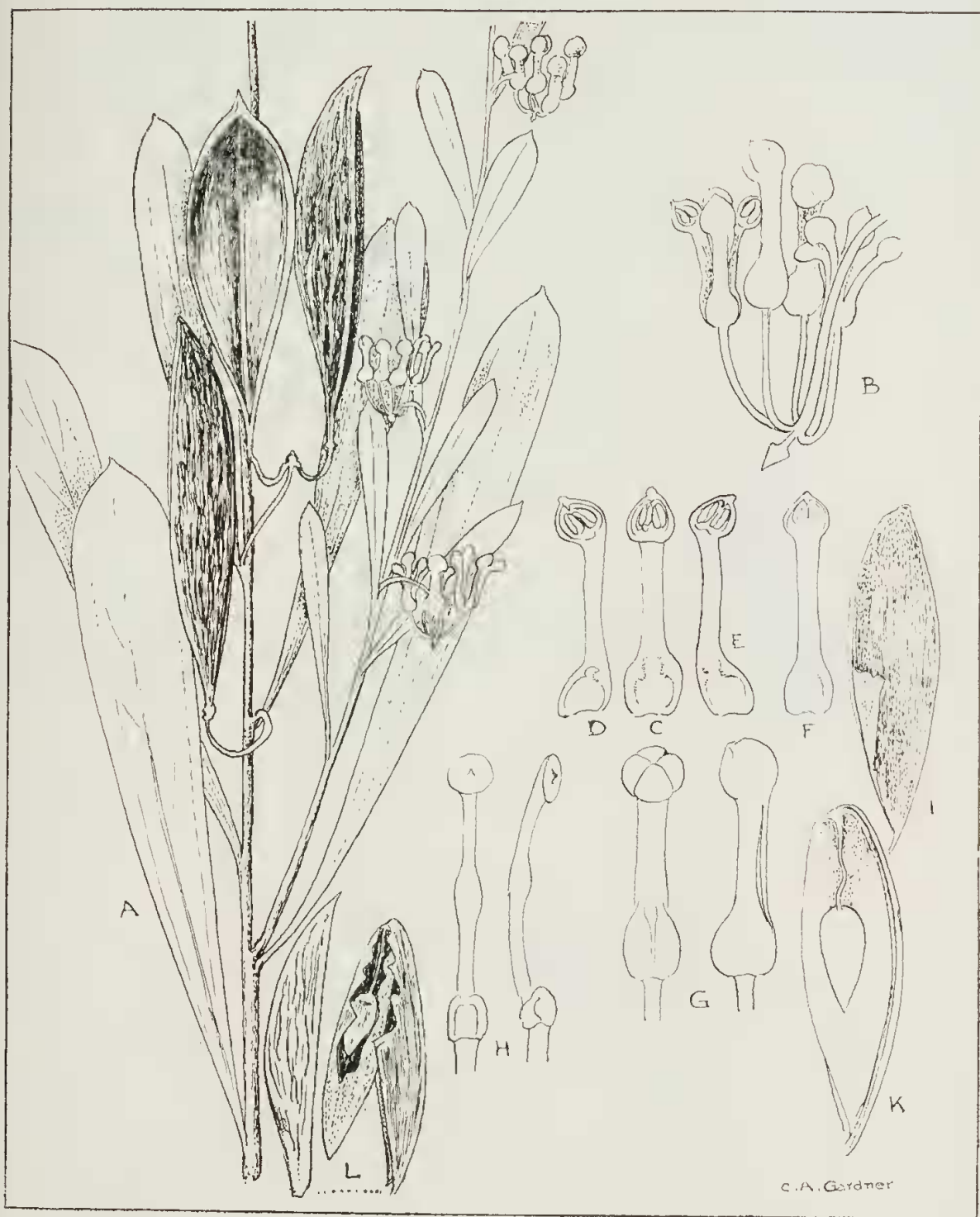


PLATE III.

Euphorbia boöphthona, C. A. Gardn.

A—Plant (half nat. size). B—Leaf. C—Branchlet with cyathia. D—Cyathium.
E—Involucral gland. F—Seed. G—Base of seed with caruncle. H—Peduncle, a
persistent axis of fruit.

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PLATE IV.

Euphorbia elutioides (Forst. f.), C. A. Gardn.

A—Habit. B—Leaves. C—Cyathium. D—Seed.



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15.—MINERALOGY OF THE DONNYBROOK SANDSTONES, WESTERN AUSTRALIA.

By DOROTHY CARROLL.

Read 13th May, 1941; Published 7th August, 1942.

INTRODUCTION.

Sandstones, Permian or Triassic in age (Maitland, 1939), outcrop along the western edge of the Darling Plateau in the vicinity of Donnybrook (Lat. $33^{\circ} 10'$ S. Long. $116^{\circ} 10'$ E.) about 130 miles south of Perth, Western Australia.

It has been supposed on lithological grounds that these sandstones, known as the Donnybrook sandstone (Saint-Smith, 1912), are a remnant of the Collie Coal Measure Series which are Permian (Maitland, 1939, p. 185), but there is as yet no supporting palaeontological evidence although farmers in the district have discovered fossil footprints, not yet identified, in the upper part of the formation. Beyond some lithological resemblance to the Coal Measure series at Collie and the occurrence of some poorly developed thin beds of coal, there is nothing to show that the Donnybrook sandstone formation is of the same age as the Collie beds; however, both appear to be of estuarine or lacustrine origin and to have been laid down on an uneven, eroded surface of the Pre-Cambrian complex. There is apparently no continuity between the two formations.

The Donnybrook sandstone formation varies from coarse, unevenly graded and bedded sandstone with pebble bands near the base, to fine-grained, evenly bedded, ripple-marked sandstones with clay partings towards the top. The beds dip at about 4° to the south-west. The thickness is not definitely known, but bores have penetrated it to a depth of 200 feet (Maitland, p. 183).

The Donnybrook sandstone forms flat-topped hills, covered by laterised sandy soils, to the west, north and south of Donnybrook. Laterite (durierust) above the sandstones is distinguishable from that formed from the Pre-Cambrian rocks by its abundant quartz grains.

The distribution of the Donnybrook sandstone is shown in Figure 1 where the formation is seen to overlap the edge of the Pre-Cambrian shield, indicating that the sandstones were in part laid down on an eroded surface of Pre-Cambrian rocks (Forman, 1936, p. 4). The Pre-Cambrian rocks immediately to the north-west of Donnybrook are at a much higher level than the sandstones. A range of sandy hills, known to be underlain in some parts by sandstone, occurs to the south-south-west of Figure 1, suggesting a continuation of the formation in this direction. The contact of the sandstone with the Pre-Cambrian just west of Nannup, about 30 miles south of Donnybrook, is similar to that at Donnybrook. Economically these sandstones are of importance, for the finer, evenly-bedded types provide an easily-worked, durable building stone.

In 1897 gold was discovered in the Donnybrook sandstones which were worked until 1906, yielding about 850 ounces of gold from 1,650 tons. The gold is thought to have been derived from small quantities in the surrounding Pre-Cambrian rocks (Maitland, p. 181) and to have been deposited from solution in the sandstones. An unsuccessful attempt was made about ten years ago to recover gold from the Pre-Cambrian rocks near where the old mines are situated in the sandstones.